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COMMERCIAL CAR JOURNAL

THE MAGAZINE FOR FLEET OPERATORS
DECEMBER 1947

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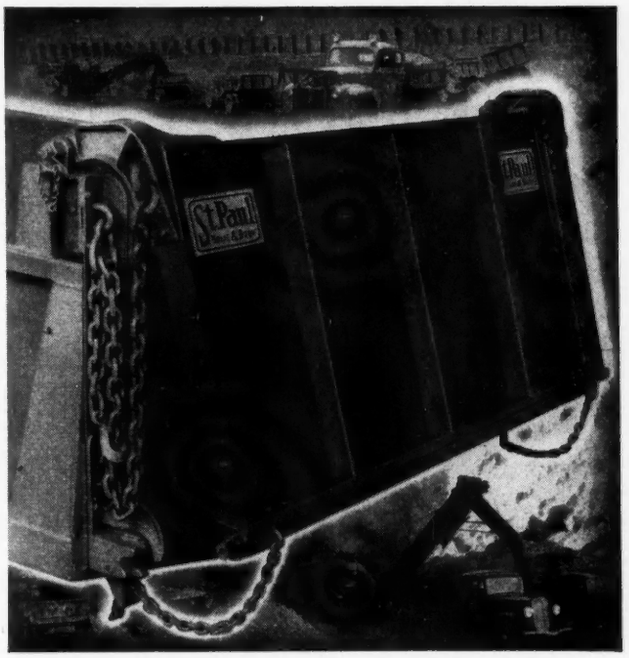

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COMMERCIAL CAR JOURNAL'S

EDITORIAL INDEX for 1947

Covering all feature articles, free publications and shop hints published during the year. This handy index will expedite the location of a wide variety of maintenance information, fleet operation stories, service notes, legislation, specifications, etc., so that it can be quickly found in the year's files of CCJ's. Or it will aid the fleetman in collecting articles for his own file of fleet information

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Exchange Units

by BART RAWSON, Associate Editor, Commercial Car Journal

MANY fleets have been going about the process of increasing their shop facilities to include complete rebuilding of unit assemblies. Others have been investigating the possibilities of using factory rebuilt exchange assemblies. The objective in either case is the same—to save money. But the means of accomplishing the objective may come from opposite directions.

As a contribution to this highly controversial subject CCJ asked approximately 80 manufacturers what they had to offer in exchange assemblies, and tabulated the results.

A quick recapitulation reveals that 10 truck makers and 11 manufacturers of component parts have active exchange programs ranging all the way from brake valves to complete engines. Several others are offering new assemblies at prices closely competitive with exchange units and still other report exchange plans in the development stage. See page 34.

Appearance is Key to Driver Training

by G. C. STANCLIFFE, General Ice Cream Corp.

UNLIKE many driver selection and training plans, ours is not based primarily on safety but rather on preservation of equipment and the creating of a desire on the part of the driver to do his best in driving and caring for his vehicle. We tailored our plan for our own specific requirements, including the need for extreme flexibility, and came up with these objectives:

1. Employ only men who are or who have the qualifications of becoming good drivers. 2. Maintain vehicle appearance at maximum level. 3. Have drivers use good driving habits at all times. 4. Effect complete coordination between the various departments concerned. 5. Set up the plan to work whether there are 100 or three vehicles at a given point. 6. Offer the plan as a package so that it can be executed by local control units. See page 46.

Scrapbook of Practical Fleet Practices

WITH this issue CCJ begins a new feature made up of short practical fleet ideas noted by its editors and correspondents in the field. In this installment:

How the slogan, "Playing Safe Beats Playing a Harp," has brought good publicity to a truck line.

Servicing wheel sanders in summer to save weight and increase shop efficiency.

Fifth wheel lugs that take push and pull thrusts.

A spare part kit that reduced service costs 20 per cent.

A route study program for drivers designed to make them better salesmen.

Turning a losing mine operation into profits by use of efficient trucks.

A midget replica of tractor and trailer for publicity.

See page 40.

Most Fleets Have Tune-up Schedules

by A. W. GREENE, Managing Editor, Commercial Car Journal

THIS is Part 2 of Fleet Operators' Experience Handbook Survey No. 6 reporting on the procedures and operations embraced in tuning engines. Last month's survey covered personnel and equipment used for this phase of fleet maintenance.

Some of the most important facts determined in Part 2 are:

Seventy-one per cent of the fleets operated by the Board of Experts tune engines regularly, mostly as part of their PM.

The majority of these fleets schedule tune-ups on a mileage basis, the balance, about 30 per cent, work on a time basis.

Engine parts requiring adjustment or replacement most frequently are, in order of frequency: Ignition points, spark plugs, fuel pumps, fan belts, battery cable, and fuel pump diaphragms.

It takes one man an average of 2.8 hours to tune an engine.

Most fleets road test an engine after tuning.

Many more facts are to be found in this survey. There are, for example, two tables showing the parts of an engine that fleets check in the process of tuning an engine. See page 49.

Electrical System Troubles

by M. K. SIMKINS, Technical Editor, Commercial Car Journal

THE battery, the starter and the lights provide adequate guides to locating potential electrical system troubles, says the author. A good system of inspection of these units will nip most road failures in the bud.

Common battery troubles are discussed, tips on testing are suggested and methods of obtaining satisfactory service are presented for the guidance of the troubleshooter. Quick checks of the starting motor as well as service information will help to systematize this practice in the shop. Practical pointers on lighting system troubles show how to catch defects and eliminate failures. See page 53.

PM Plan for Mixed Fleet

by J. F. BENNET, Maintenance Supt., Country Club Dairy

PREVENTIVE maintenance and garage practices have a deeper meaning when all your drivers are salesmen. A salesman who works on a salary and commission basis is likely not to make his regular wages when a truck breakdown to say nothing of reduced sales for company products. On top of that we have 18 different vehicle types each suited to a particular job.

Obviously you can't apply the same PM yardstick to a big over-the-road job as you do to a city delivery unit. So our PM is virtually set up for each unit, with a separate lubrication and inspection schedule for each. We have found that over-service costs money, too. On some units it is not practical to service them on a mileage basis because they make such low mileage. On these we use a time basis, usually 90 days.

It takes six basic forms to run our system with efficiency. They are all reproduced, beginning on page 38.

Many Makers Now Offer

Exchange Units

A guide to the availability of

WHILE many fleets have been going about the process of increasing their shop activities to include the complete rebuilding of both major and minor unit assemblies, such as engines, transmissions and electrical equipments, others have been quietly investigating the possibilities of using factory rebuilt exchange assemblies now offered by many truck and component parts manufacturers. The objective in either case is the same—to save money. But the means of accomplishing that objective may come from exactly opposite directions. What one fleetman may save through volume production and highly specialized shop operations, another may lose as a result of smaller volume and changing labor conditions.

The solution, obviously, is a matter that each operator must solve in his own way. But as a contribution to this highly controversial subject,

Truck Manufacturers' Units

COMPANY	DESIGNATION OF EXCHANGE UNIT	REBUILDING PERFORMED BY	UNIT GUARANTEED BY	AVAILABILITY
Chevrolet (Note 1)	Connecting Rods, Bendix Drives, Generators, Voltage Regulators, Brake Shoes, Knee-action Units*, Windshield Wiper Motors*	Chevrolet Factories or Special Contractors	Chevrolet Division	All Authorized Chevrolet Dealers
GMC Truck & Coach	Engine Assemblies†	GMC Factory	GMC Truck & Coach Div.	All Dealers
Ford	Clutch Plate & Disc	Ford Factory	Ford Motor Co.	All Dealers and Distributors
	Shock Absorbers	Ford Factory	Ford Motor Co.	
	Engine Block Assembly	Authorized Rebuilders	Authorized Rebuilders	
	Fuel Pumps	Authorized Rebuilders	Authorized Rebuilders	
	Carburetors	Authorized Rebuilders	Authorized Rebuilders	
	Distributors	Authorized Rebuilders	Authorized Rebuilders	
	Generators and Starters, Voltage Regulators, Brake Shoes, Water Pumps, Master and Wheel Cylinders, Connecting Rods	Ford Dealer Reconditioners	Ford Dealer Reconditioners	
FWD	Engines, Front and Rear Axles, Transmissions, Transfer Assemblies, Double-Reduction Axle Carriers, Clutches	FWD Factory	Four Wheel Drive Auto Co.	All Dealers
Hudson	Connecting Rods	Hudson Factory	Hudson Motor Car Co.	All Dealers
International Harvester	Crankshafts	IHC Engine Factory	IHC Branches and Dealers	All Dealers
	Clutch Assemblies	IHC Service Rebuilding Stations		All Dealers
	Brake Shoes and Lining			All Dealers
	Carburetors and Fuel Pumps, Transmissions, Differentials, Generators and Distributors, Radiators			Selected Branches and Dealers
Mack	Connecting Rods (Babbitt)	Mack Factory	Mack Mfg. Corp.	All Branches and Dealers
	Main Bearing Caps (Babbitt)	Mack Factory		All Branches and Dealers
	Shock Absorbers, Shutter Thermostats, Torque Rod Ends, Air Brake System Parts	Supplier's Factories		All Branches
Marmon-Herrington Exchange	on Ford Parts only—See listing under Ford			
Studebaker	Engines††	Studebaker Factory	Studebaker Factory	All Dealers
	Clutch Assemblies, Connecting Rods, Starter Drives, Shock Absorbers, Voltage Regulators, Carburetors	Studebaker or Supplier's Factory	Studebaker or Supplier's Factory	
White	Short Blocks, Transmissions, Rear Axle Centers, Generators and Starters, Fuel Pumps and Carburetors, Distributors	Authorized Branch Rebuilders	Authorized Branch Rebuilders	All Branches and Many Distributors

rebuilt assemblies offered nationally as exchange items

COMMERCIAL CAR JOURNAL set out to find out just what units are currently available on a nation-wide scale and from whom. Approximately 80 leading manufacturers of trucks, engines, transmissions, axles, clutches, steering gears and accessories were asked where they stand on exchange items. The results are set forth in the tables below. Except where indicated, all items are rebuilt.

A quick recapitulation will reveal that 10 truck makers and 11 manufacturers of component units and accessories have very active exchange

(TURN TO PAGE 94, PLEASE)

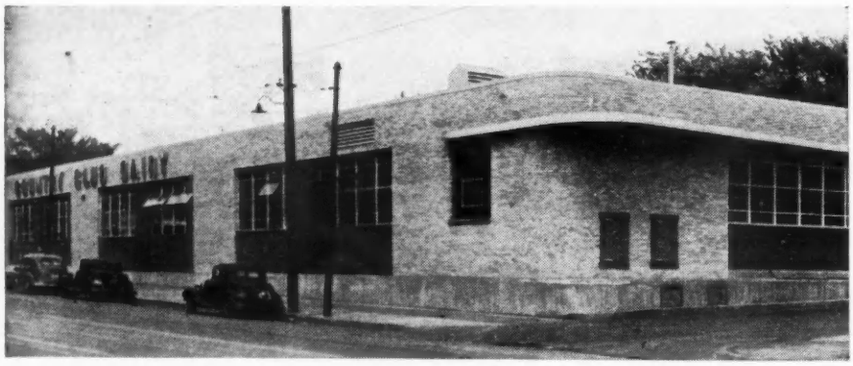
by ***BART RAWSON***
Associate Editor
Commercial Car Journal

Component Manufacturers' Units

COMPANY	DESIGNATION OF EXCHANGE UNIT	REBUILDING PERFORMED BY	UNIT GUARANTEED BY	AVAILABILITY
Bendix Products Division	Hydrovacs BK Cylinders BK Valves	Bendix BK Distributors, Assoc. Distributors and Dealers, Truck Dealers and Local Parts Jobbers	Bendix BK Distributors, Assoc. Distributors and Dealers, Truck Dealers and Local Parts Jobbers	Bendix BK Distributors, Assoc. Distributors and Dealers, Truck Dealers and Local Parts Jobbers
	Stromberg Carburetors	Stromberg Distributors, Assoc. Distributors and Dealers	Stromberg Distributors, Assoc. Distributors and Dealers	Stromberg Distributors, Assoc. Distributors and Dealers
Bendix-Westinghouse	Compressors Compressor Heads Compressor Blocks Compressor Crankshafts Compressor Con Rods Governors Valves (all types) Air Gages Cut Out Cocks Stop Light Switches Low Pressure Indic. Air Horns Clutch Cylinders Clutch Valves	Bendix-Westinghouse Factory	Bendix-Westinghouse Automotive Air Brake Co.	Bendix-Westinghouse Authorized Distributors
Borg & Beck Div. Borg-Warner Corp.	Clutch Cover Assemblies	Borg & Beck Factory	Borg & Beck Div.	Borg-Warner Parts Jobbers
Ex-Cell-O Corp.	Diesel Injection Pump and Pump Assemblies	Ex-Cell-O Factory	Ex-Cell-O Corp.	Ex-Cell-O and Engine Manufacturers' Distributors and Dealers
Hoof Products Co.	Governors††	Hoof Factory	Hoof Products Co.	Hoof Distributors and Jobbers
King-Seeley Corp.	Windshield Wiper Motors**	King-Seeley Factory	King-Seeley Corp.	King-Seeley Distributors
Lipe-Rollway Corp.	Clutch Cover Assemblies	Lipe-Rollway Factory or Distributors	Lipe-Rollway Corp. and Distributors	Lipe-Rollway Distributors and Truck Dealers
Replacement Unit Co.	Clutch Pressure Assemblies Clutch Plates	Replacement Unit Factories	Replacement Unit Co. and Jobbers	Parts Jobbers and Distributors
Spicer Mfg. Div. Dana Corp.	Brown Lipe Clutches	Authorized Clutch Specialists	Authorized Clutch Specialists	Authorized Clutch Specialists
United Motors Service Div. General Motors	Delco-Remy Generators Delco-Remy Regulators Delco-Remy Starter Drives††	United Motors Service Delco-Remy Factory Delco-Remy Factory	United Motors Service Delco-Remy Division Delco-Remy Division	Service Distributors and Jobbers
	AC Fuel Pumps Delco Shock Absorbers††	United Motors Service Delco Products Factory	United Motors Service Delco Products Div.	
Velvac, Inc.	Vacuum-Hydraulic Units Brake Valves (all types) Power Chambers and Cylinders	Velvac Factory	Velvac, Inc.	Velvac Distributors; Truck and Trailer Distributors and Dealers

NOTE 1: Chevrolet also offers the following NEW assemblies on which special exchange allowances are offered: Complete engines, short blocks, water pumps, armatures, starting motor drives, carburetors, and shock absorbers.

* Passenger cars only.
** For 1946 Ford and Mercury passenger cars.
† No factory exchange on GM diesels. Some branches and distributors offer this service on independent basis.
†† New Unit on which exchange allowance is made.



Country Club Dairy's one-year old garage is designed for maximum service efficiency. Daily check island and Supt's. office are between two main doors

PM Plan for Mixed Fleet

Dairy fleet with 18 different types of trucks tailors its preventive maintenance program to the requirements of individual units, assuring adequate coverage without over-service

PREVENTIVE maintenance and garage practices have a deeper meaning when all your drivers are salesmen. A road failure takes on added meaning and importance when it means that the driver-salesman, who usually works on a salary and commission basis, is likely not to make his regular wages when he has a breakdown, to say nothing of reduced sales for company products.

To eliminate emergencies we wanted a thorough PM program—one that keeps the units looking well as well as running well. We couldn't pick up a ready-made PM system and make it fit our fleet because we have too many different types of trucks. We have trucks suited to each job.

Here's what we have to keep up: 27 Divcos, 6 DeliVr-alls, 15 White Horses, 2 Macks, 30 Internationals (K-1 to K-7), 1 White 810, 3 Dodges, 21 Fords, 6 Chevrolets, 3 Diamond Ts, and 3 GMC's; a total of 117 trucks in 18 different types and three semi-trailers.

Obviously you can't apply the same PM yardstick to an International K-7 that you do for a Divco because the mileage is different, the work is different. One hauls a load at maximum speed to a point and the other stops and starts all day

by J. F. BENNETT
Maintenance Superintendent, Country Club Dairy Co., Kansas City, Mo.

LUBRICATION SERVICE

1 Grease Every _____ _____ Miles or Every _____ Days
2 Change Oil Every _____ _____ Miles or Every _____ Days
3 Change Trans. & Diff. Every _____ Miles or Every _____ Days
4 Repack Wheel Bearings Every _____ Miles or Every _____ Days

Make _____ Truck Number _____

Service Group	Mileage	Date Serviced	Done By	Special Work Done

Fig. 1. Lubrication Service Record is made out individually for each truck in fleet, provides scheduling of four important items plus complete record of work accomplished or needed

DAILY TRUCK REPORT

Date _____ 1947

No.	Mileage	Gas	Oil	No.	Mileage	Gas	Oil	No.	Mileage	Gas	Oil
1				51				100			
2				52				101			
				53				102			
				54				103			
				55				104			
				56				105			
				57				106			
				58				107			
				59				108			
				60				109			

Fig. 2. Daily Truck Report is master gas, oil and mileage record. It is kept by the gas attendent and provides a separate line for each truck as well as daily total for entire fleet

and like the boy on the merry-go-round, ends up right where it started.

Individual Basis

SO our PM is virtually set up for each unit. For instance, in lubrication, we have a chart for each truck which gives the time when each operation should take place (Fig. 1). This blank is made out for each truck and lists four operations and the time they should take place. Numbered from one to four inclusive, the greaseman enters the number as the operation, the mileage and the date. He can list any special work done at the same time and this becomes a permanent record of the lubrication of the vehicle for its entire life. It is also the basis of the cost of lubrication and oil. This blank solves the problem of getting the right kind of a job done for the work and the size of the truck.

Since all of our units come into the garage every day, we were able to devise a simple system for getting the PM work done at the proper intervals by keeping a record of the gasoline and mileage as each truck checks in. Each truck coming in from its day's work stops just inside the entrance where it is gassed up,

(TURN TO NEXT PAGE, PLEASE)

P. M. Check 90 Days or 2500 Miles

DATE_____ MILEAGE_____ TRUCK NO._____

_____ Compression Check___1___2___3___4___5___6___7___8___ Inches in Vac._____
_____ Clean and Space Plugs_____
_____ Points Clean____ Replace_____
_____ Dist. Gap, Clean and Check
_____ Dist. Body, Clean and Oil
_____ Ignition Wires, Clean and Check
_____ Check Coil and Condenser
_____ Adjust Tappets
_____ Tighten all Manifolds
_____ Set Ignition Timing
_____ Clean Carb. and Air Cleaner
_____ Free up Choke and Hand Throttle
_____ Check for Gasoline Leaks
_____ Clean Fuel Pump Bowl
_____ Fuel Pump Pressure_____

_____ Type of Pump Vac. _____ Elect _____
_____ Rad. Hose____ Freeze Plugs _____
_____ Tighten Rad. Bolts
_____ Check all Water Connection
_____ Check and Repack Water Pump
_____ Oil, Condition____ Level_____
_____ Oil Pressure_____
_____ Check for Oil Leaks
_____ Clean Gen. Commutator, Oil Brgs.
_____ Tighten and Check all Connection
_____ Gen. Charging Rate____ Amps.
_____ Clean Starter Commutator, Oil Brgs.
_____ Tighten Starter Motor and Connection
_____ Check Lights and Wires
_____ Clean and Oil W. S. Wiper

_____ Check Ft. Wheel Lining and Brgs.
_____ Check for Loose Spindle Bolts
_____ Adj. Tie Rod and Drag Line
_____ Tighten Front Spring Shackles
_____ Tighten Front Spring U Bolts
_____ Adj. Turning Radius Stop Screws
_____ Check and Adj. Steering Gear
_____ Adj. All Motor Mountings
_____ Adj. Front Wheel Toe-In
_____ Tighten Engine Pan Bolts
_____ Tighten and Check All Shocks
_____ Tighten Trans. and Diff. Bolts
_____ Check U Joints and Trans. Brgs.
_____ Check and Adj. Rear Wheel Brgs.
_____ Check and Adj. Pinion Brgs.

_____ Tighten All Wheel Bolts
_____ Inspect Muffler and Tail Pipe
_____ Reset Gas Line to Prevent Rubbing
_____ Check for Sticking Brake Cables
_____ Check Master Cyl. Lines and Hose
_____ Adjust Both Brakes
_____ Tighten All Body Bolts
_____ Adjust Rear Spring Shackles
_____ Check Clutch and Pedal Adjustment
_____ Check Pedal Springs
_____ Tighten or Replace Cab Flr. Bolts
_____ Adjust Door Closing Rod
_____ Free up Window Regulator
_____ Tighten All Door Panel Screws
_____ Free up Seat, Check Trim

Additional Work Needed _____

Mech._____ Inspection_____ Hrs. Repair Labor_____ Hrs.
Mech._____ Inspection_____ Hrs. Repair Labor_____ Hrs.
Mech._____ Inspection_____ Hrs. Repair Labor_____ Hrs.

Fig. 4. PM Check Sheet is based on 90-days or 2500 miles. Although individual items are conventional they are grouped for upper and lower service

Fig. 3. Master Cost Sheet (below) provides fleet's basic records as well as individual history of each vehicle. It fits a loose-leaf binder

		MONTHS JAN.	FEB.	MAR.	APR.	MAY	JUN.	SIX MONTHS ENDED JUNE 30	MONTHS JUL.	AUG.	SEP.	OCT.	NOV.	DEC.	TOTAL FOR YEAR	COST TO DATE
AGE IN MONTHS																
DAYS OPERATED																
MILES OPERATED																
ON ROUTE NUMBER																
GAS	GALLONS															
	COST															
	MILES PER GALLON															
OIL	QUARTS															
	COST															
	MILES PER QUART															
CHASSIS REPAIRS	PARTS															
	LABOR															
	OUTSIDE															
BODY REPAIRS	PARTS															
	LABOR															
	OUTSIDE															
TIRES	REPLACEMENT															
	REPAIRS															
	LABOR															
WASHING & GREASING																
INSPECTION																
OTHER	ANTI-FREEZE															
	CHAINS															
TOTAL																
COST PER MILE																
GARAGE OVERHEAD																
FIXED CHARGES	DEPRECIATION															
	INSURANCE															
	LICENSES															
	TOTAL															
ACCIDENT—PARTS																
LABOR																
OTHER																
TOTAL COST																
COST PER MILE																

OPERATING COST FOR YEAR 19____ | DATE PURCHASED | BODY TYPE | CAP. TONS | USED FOR | MAKE | VEHICLE NO.

DIEBOLD FLEX-SITE FORM 24508 (LOOSE-LEAF)

PM Plan for Mixed Fleet

(Continued from page 37)

DAILY VEHICLE REPORT

Truck No. ..... Route No. ..... Date ..... 19...

Nature of Trouble

1
2
3
4
5
6
7
8
9

Salesman's Signature

Mechanic's Report

Chassis Motor Labor Hrs. ..... Mech

Body Labor Hrs. ..... Mech

TIRE CHANGE

Speedometer Reading ..... Date .....

TIRE-OFF

UNIT NO.	TIRE SIZE AND MAKE	SERIAL NO.	POSITION	REASON AND DISPOSITION

TIRE-ON

UNIT NO.	TIRE SIZE AND MAKE	SERIAL NO.	POSITION

TURN THIS IN WITH TRIP REPORT

Fig. 5. Daily Vehicle Report is used for driver complaints, mechanics' statement of work done and labor time record

Fig. 6. Tire card provides record of all changes including service required en route. One is kept in each truck

oil checked and the mileage recorded.

This record is kept on the Daily Truck Report (Fig. 2) and it can be checked daily for the units that require certain servicing from information obtained either from the master cost sheet (Fig. 3), the lubrication service sheet (Fig. 1) or the PM sheet (Fig. 4). The latter is not only a work sheet but after the checks have been made becomes an accumulative history of the service on the truck.

Over-Service Costs Money

BY a frequent study of the past history of the vehicle we can often determine whether it is being overserviced. Over-service costs money, too. On some units it is not practical to service them on a mileage basis because they make such low mileages that time methods are better. On some of these we mark up a PM check each 90 days. They get washed three times a week and their oil may be marked for a change on a time basis, too.

In all instances both dates and mileages are recorded so that we always have a check against the mileage for a period. We might start giving a truck a PM every 90 days because it averaged only three thousand miles each 90 days. If the route is changed and mileage shoots up to 10,000 miles in 90 days, we can catch it quickly even if nobody tells us about it. This would be an isolated instance, of course, but it might happen.

Daily Driver Report

ANOTHER form we rate high in importance because of the way our drivers work, is the Daily Vehicle Report (Fig. 5). This is provided for the driver to report any mechanical trouble or annoyance from his truck. In many fleets this driver report is a single blank recording the complaint. We have made a double form out of it by making the lower half of it the mechanic's report who did the work to satisfy the complaint. More than that we have also used this blank to enter the cost of the labor.

This form makes it imperative that something be done about the complaint and the report and costs entered.

PM Feeds the Shop

ALMOST all of our new PM system has been worked out since we moved into our new garage and most of the forms have been in use less than a year. So far they are all working out well, road failures are almost unknown, and costs are low enough to be compared with anyone else's fleet.

As time goes on our records will become even more valuable because it is a part of our system to retain all these blanks for each of our vehicles throughout its life. We can look back at any time and see what has been done, what the costs are and get a pretty good idea of where the costs are going.

Our PM program feeds the shop with our major overhauls, engine rebuilds and heavy jobs as well as the regular day-to-day maintenance work.

In order to determine whether a major job is needed we always check the previous three PM reports. These will accurately reflect the condition of the truck, show its age, and may show that additional work marked up for it has not been done. There is space at the bottom of the blank for writing up additional work recommended and a truck that is leading up to a general overhaul will usually show that much work has been done on it and that more has been planned.

Upper & Lower Service

OUR PM work sheet (Fig. 4) follows more or less conventional lines, but is divided into two categories. The first half of the sheet lists operations that we class as upper or above the frame, while the lower half lists operations below or under the truck.

Two or more men can work on one

(TURN TO PAGE 96, PLEASE)

The OVERLOAD

by **GEORGE T. HOOK**
Editor

Mud in the Public's Eye
A Case for Splash Guards

THE road spray sent up from the rear of a truck or combination during wet weather is less a safety hazard than it is an active generator of public ill-will. Fleet operators should do something about it.

* * *

There are occasions, of course, when the spray can be a safety hazard. Indentations in the road surface collect water and muck and if the truck swishes over such a puddle at the moment a motorist is attempting to pass, the mess on the car's windshield can result in trouble. But on most occasions, the following motorist is only too well aware of the mist that is being tossed at him and he protects himself by keeping a safe distance to the rear.

* * *

And while screwing up his courage to shoot past at an opportune moment, he relieves his emotions by damning the truck . . . not the weather, not road conditions . . . the truck.

* * *

During convivial moments the salutation "Here's mud in your eye" is accepted as a genial expression of good-fellowship, even though the possessor of the eye doesn't know the meaning of the term. But out on the road, and coming from a truck, it's a challenge. Spread out on a windshield, the mud spells "Damn that truck!" And that makes it a challenge to fleet operators. Good public relations demand that the mud be deflected and along with it the ill-will of millions of motorists.

* * *

Only two states—Oregon and Washington, where a protracted spell of dewy weather, shall we say, is a seasonal characteristic—have laws that compel truck operators to afford motorists some protection. Both states require every vehicle to be equipped with rear wheel fenders or a device adequate to effectively reduce the wheel spray or splash of water from the roadway to the rear of the vehicle.

* * *

That is why in Oregon and Washington you will find trucks and trailers with splash flaps, aprons or guards—whatever you prefer to call them—dangling back of the rear wheels. Ask fleet operators how they feel about them and they will tell you that they are a good thing. Installation and the dead weight involved, they say, are well worth the cost because of the improved relations with the motoring public . . . and the pedestrian public.

* * *

It is perhaps too much to expect all fleet operators within sight of these words to forestall further splash-guard legislation by equipping their vehicles voluntarily and setting an example which non-fleet operators would follow. Some fleets won't want to undertake the expense and others will pooh-pooh the idea because they are not public-relations-minded. And the non-fleet operator doesn't usually do anything until he is compelled to do it. Therefore, lacking voluntary action, we can all look forward to compulsory splash-guard legislation by more and more states.

* * *

But until that time fleet operators should install splash guards voluntarily and get for themselves and the truck transport industry credit for a step that will make the public better disposed toward motor trucks.

* * *

To help fleet operators make such installations, COMMERCIAL CAR JOURNAL is now gathering material dealing with the practices and experience of fleet operators in Oregon and Washington. An informative article on the subject will be published in an early issue.

* * *

Let's do something about getting the mud out of the public's eye.

Dingy, Dirty Surroundings
A Case for Shop Efficiency

THE dingy, grimy, crowded, uncomfortable conditions under which too many fleet operators make their fleet superintendents, shop foremen, maintenance superintendents and mechanics work take a heavy toll in shop efficiency. That such inefficiency costs money should be apparent to any fleet owner who will take the trouble to stroll around his shop with eyes wide open.

* * *

Existence of crowding can in many cases be excused. Some fleets have outgrown their quarters, have no room for expansion in the same vicinity and cannot find quarters elsewhere at a price they can afford; others recognize their shortcomings, have room for expansion but refuse to make the investment required under current conditions.

* * *

But there is no excuse for compelling shop employees to work in a dingy atmosphere when modern paints and lighting are available to work a transformation. Dinginess, besides making it more difficult for shopmen to do their vitally important work, and thus adding to maintenance costs, promotes slovenliness. There is no incentive to keep a shop well policed if there are dark corners in which to shove things or if another area of grime, grease and oil looks just like the areas adjoining. And poor housekeeping simply adds more to maintenance costs.

* * *

On top of this there is the matter of morale. How much loyalty does a dingy shop generate? How much costly turnover in personnel does it cause? How can it possibly attract the best mechanics in the locality? The answers are None, Plenty and It Doesn't.

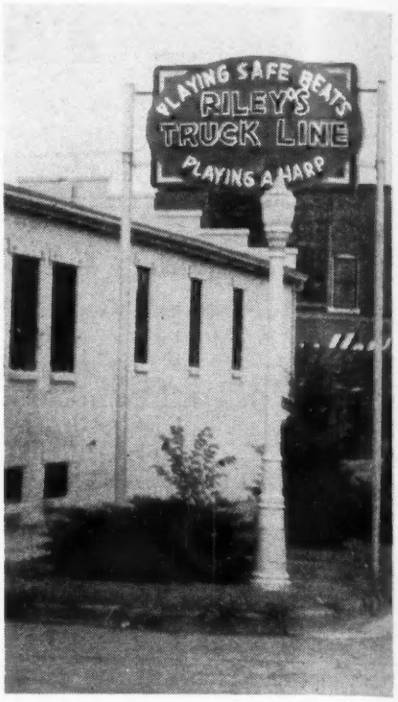
* * *

At this time of the year fleet owners will be wishing their employees, as we do, a Merry Christmas and a Happy New Year. One way they can help realize it is by doing something constructive about shop conditions that will promote maintenance efficiency.

Scrapbook

of Practical Fleet Practices

1. What Beats Playing a Harp?
2. Servicing Sanders in Summer
3. Fifth Wheel Lugs
4. Spare Part Kit Saves 20%
5. Route Study for Drivers
6. Profitable Mine Operations
7. Midget Replica



1. WHAT BEATS PLAYING A HARP? To this question, residents of Kansas would probably reply, "Riley's Truck Line." Technically speaking, that is not the correct answer, but it's good publicity just the same. It stems from the company's slogan, "Playing Safe Beats Playing a Harp," which appears on all its vehicles and now in neon letters at headquarters in Pratt. Added bonus—a safety consciousness among all employees.

Every working day in the year, CCJ correspondents and editors are in contact with practical fleet operators all over the country. Many of the things they see and hear become the subjects of feature articles; some become the subject of a round-up study or result in a special survey feature. But still others—workable but isolated examples of good fleet management—have perforce been relegated to the written or mental files.

So on these pages, CCJ begins its Scrapbook of Practical Fleet Practices designed to keep readers abreast of the so-called "little things" that can often make big differences in fleet operation.

4. SPARE PART KIT SAVES 20%

Maintenance costs were reduced almost 20 per cent by the Millman Lumber Co., St. Louis, when they equipped nearly 100 trucks with a kit of spare replacement parts and trained the drivers to make emergency installations. Because of the rugged terrain traversed by company transport trucks from saw mills in the woods to the cities, road service was almost out of the question. Deliveries were often made in near-inaccessible places where building was under way.

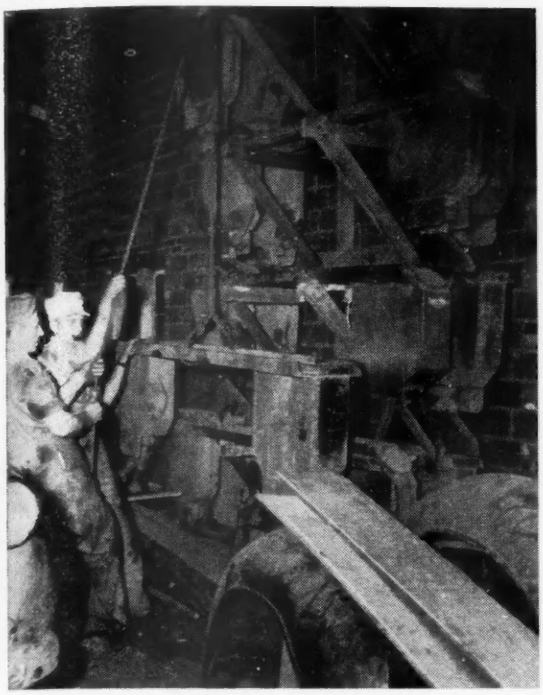
So each truck was provided with a kit containing one spare axle, a rod to punch the broken end out, a fan belt, a set of ignition points, an ignition coil, two sparkplugs and a fire extinguisher. Each driver is instructed in the installation of the parts and asked to bring the truck into a company shop whenever possible.

5. ROUTE STUDY FOR DRIVERS

Since drivers are in constant contact with shippers, Mistletoe Express, Inc., Oklahoma City, Okla., conducts a school for drivers. Classes are usually held one evening a week and are entitled "Route Study."

The theory is (and they now have many practical examples that it works) that an intimate knowledge of Mistletoe routes promotes better understanding between customer and express company. They are drilled on schedules and routes so that they may answer quickly any question that might be put to them by a customer. Since the type of merchandise determines handling, crating, routes and good condition on delivery, drivers are trained in all phases.

In addition Mistletoe recognizes that drivers, particularly, city pick-up drivers, are also salesmen. Individual sales ability is brought out by the use of modern devices in the school, such as recording and public address equipment. Group criticism and individual assistance in speaking and sales promotion is a part of the course. Training films and talks by outstanding experts are also featured.



2. SERVICING SANDERS IN SUMMER. Schien Truck Lines, Sedalia, Mo., has 27 tractors equipped with wheel sanders. In the spring they are all removed and stored on racks shown. During the summer they are cleaned, serviced and painted on a shop-fill-in basis. In late fall they are remounted. Company saves most by not hauling the extra weight for seven to nine months. Added savings come from reduced truck washing and service time, and better scheduling in the shop.

3. FIFTH WHEEL LUGS. Despite the unpopularity of the term "lug," now often applied to extras unloaded on reluctant car purchasers, Schien Truck Lines of Sedalia, Mo., has a good lug or, to be exact, four good lugs. They consist of small strips of bar steel, ½ x 1 x 2 in., welded to each frame member fore and aft of the fifth wheel base. Pulling and pushing strains are now exerted against the lugs instead of the U-bolts, leaving the latter free for their primary job—to hold the fifth wheel down.

6. PROFITABLE MINE OPERATIONS

By hauling twenty-three 20-ton loads of rock a day up a 15 per cent grade out of the Oronogo Mutal open pit lead and zinc mine at Oronogo, Mo., 16 White tandem axle trucks have turned a losing proposition into a profit producer.

The 16-ton units are purposely loaded to 20 tons or better. Gear ratios were changed to 7:22 to 1 when pinions turned too fast and burned up in an 8:73 to 1 ratio rear end. Excessive foaming in the differential case was reduced by a special oil formulated by an oil company.

The long steep grade (about two miles) caused front bearings in transmissions to run dry when lubricant level was less than full. Prompt renewal of leaking seals and maintenance of oil level ended this problem.

7. MIDGET REPLICA. Springfield, Mo., residents blinked, looked twice, took notice when a midget replica of a Campbell's 66 Express tractor and trailer appeared in a recent parade. The facsimile was made to scale. Freuhauf Trailer Co. built the half-scale duplicate of its trailer van and the Campbell shops built the tractor using an Austin engine and chassis. Painting was exactly like the regulation equipment even to the use of "Scotch" lights on the front which glow at night from reflected light. The company plans to use the new addition to the fleet in parades and public events throughout its territory.

The company also uses 32 trucks to haul out ore rock in a combined highway and off-the-highway operation. Speeding of heavy loads up steep grades reduced handling costs and turned a mine into a profit maker that had made $20 million since the turn of the century, but which had lost $6 million by conventional mining methods before the owner resorted to the material handling ability of the modern motor truck.

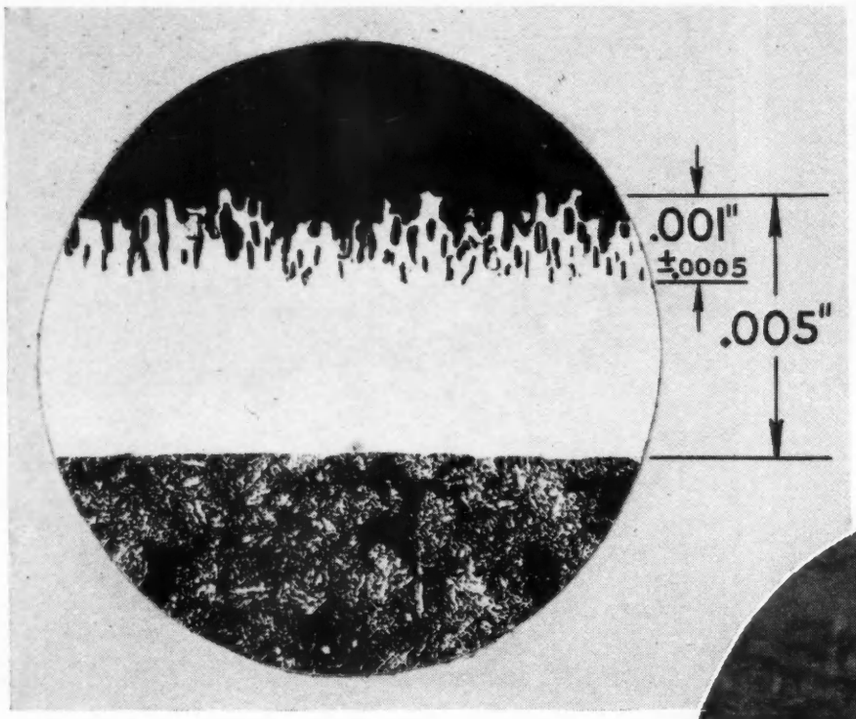
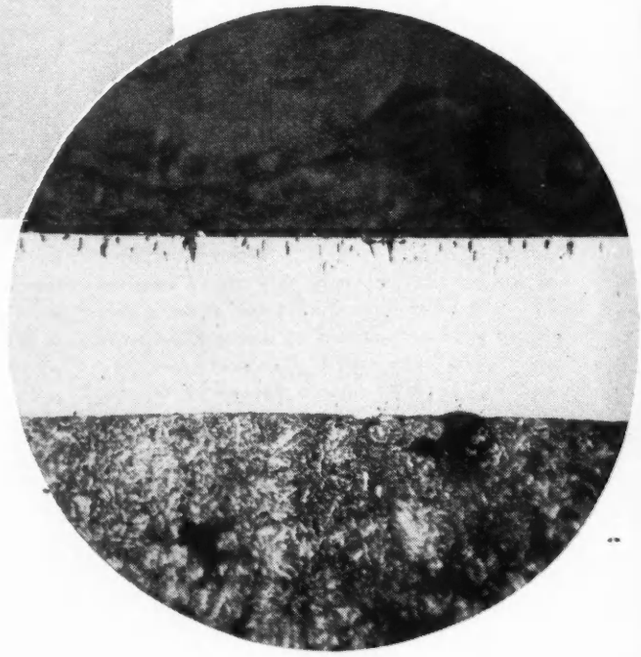


Fig. 1, left. Cross section of a porous chrome ring, magnified about 350 times shows surface characteristics produced by the Van der Horst process described in the text. Original plating (white area) is .005 in. thick and smooth. Current reversal pits the surface (producing porosity) to a depth of .001 in. held to a tolerance of ±.005

Fig. 2, below, shows what the porous chrome surface looks like after it "wears in" while in service. It becomes bright, hard and shiny. Dark areas at top of both illustrations represent material introduced into specimen for color contrast. Mottled gray areas below chrome plating are F-88 iron



Manufacturers and users agree that chrome-plating reduces ring and cylinder wear, increases fuel and oil mileage. New flexible F-88 high-strength iron reduces breakage

Fleet Experience Okays Chrome

EDITOR'S NOTE—This is a round-up of fleet experience with porous-chrome piston rings. It is offered as a supplement to the SAE paper and related comments on chrome-plating engine and chassis parts, reported in the September, 1947, issue of Commercial Car Journal. By virtue of its position as one of the leading piston ring manufacturers, one of the earliest users of the Van der Horst process, and one of the first to produce porous-chrome piston rings for civilian use, American Hammered is eminently qualified to speak for the industry.

THERE were numerous developments during the last war which will be of tremendous advantage to industry throughout the coming years. One of these was the development of porous-chrome-plated piston rings.

During the war, porous-chrome piston rings set enviable records in tank and aircraft engines; particularly when operating under adverse conditions, as in extremely dusty atmospheres and under extremely heavy loads. It is now a known fact that because of the additional engine life which resulted from the use of these rings, many battles were won which would have been lost had the equipment required normal overhauling.

Tests Began in 1944

REALIZING that the problems of engine life experienced by the armed forces under combat conditions were relatively the same as peacetime problems of the operators of heavy equipment, the Piston Ring Division of Koppers Company, manufacturers of American Hammered piston rings, started a series of comprehensive tests in January of 1944 to determine if the porous-chrome ring would be as effective in normal heavy-duty truck use as they were in

Fig. 3. Photomicrograph of a piece of individually sand cast standard gray iron piston ring magnified 250 times. It is brittle with very little elasticity

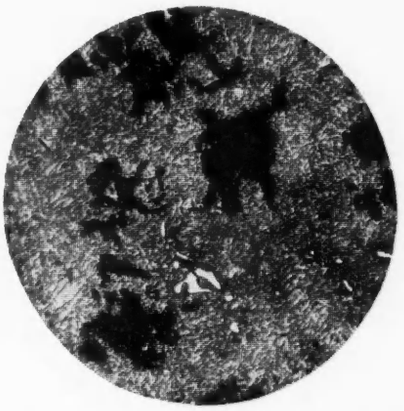
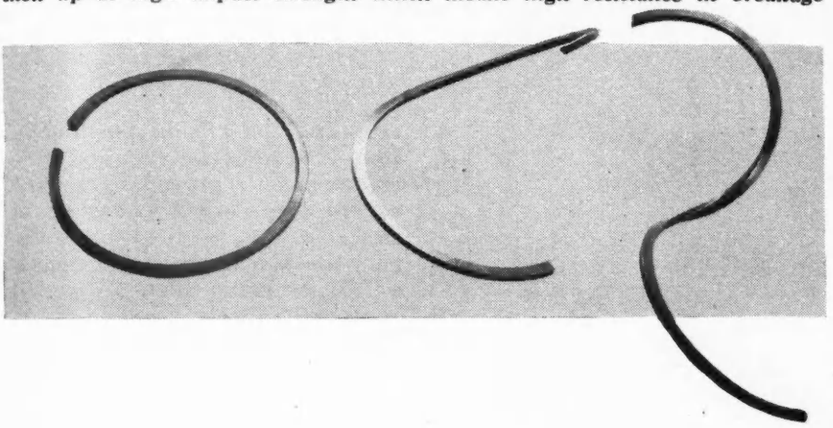


Fig. 4. Physical characteristics of centrifugally cast F-88 high strength iron magnified 250 times. It has high modulus of elasticity and tensile strength

Fig. 5, below. One of the unique properties of F-88 high-strength piston ring iron is well exemplified by the unusual shapes into which two of the rings illustrated have been bent. The practical benefits of this unusual property show up as high impact strength which means high resistance in breakage



Plated Rings

by LEE DOTY
Chief Engineer, Piston Ring Division
Koppers Co., Inc., Baltimore, Md.

combat aircraft and tank engines. Results of these tests convinced American Hammered engineers that the use of porous-chrome would literally revolutionize engine maintenance. Porous-chrome piston rings, therefore, were one of the first of the wartime developments to be made available to fleet operators. In January of 1946, production of porous-chrome rings for engines that are normally used by fleets was started by American Hammered in large quantities and these rings found ready acceptance by fleet operators.

In the final analysis, the proof of any process or product is established entirely by the reports of people who use them in their everyday work. The results that are secured by them are what determines whether a product is successful or not. Reports that have been received from fleet operators, who have been using these rings over a period of time, indicate, conclusively, that porous-chrome piston rings do reduce maintenance costs and prolong the life of engines.

Four Advantages

IN the original testing that was done on the porous-chrome ring, it was found that the advantages were as follows:

1. Definite reduction in both ring and cylinder wear, giving longer ring and cylinder life, and resulting in less frequent overhauling of the engine.
2. Resistance to scuffing or scoring of the rings, cylinders and pistons.
3. Reduced fuel consumption which is the largest item of expense with fleet operators.
4. Low oil consumption over a longer period of time.

Fleet Experience Reports

How these field tests compare with actual fleet experience is shown by the following excerpts from some of the reports that we have received.

A large food distributing company, operating 220 Dodge trucks and passenger cars in door-to-door delivery service in the Los Angeles area, says:

"For the last year, we have used porous-chrome piston rings and the results are exceptional. We have tried engines before and after the installation of porous-chrome rings and they have shown the best results that we have ever had with any ring installation. The increase in engine life is such, however, that we have not yet pulled down an engine in which porous-chrome rings have been installed. We see no indication that this will be necessary in the near future; so that, actual cylinder wear figures are not available.

"We formerly were worried with top ring sticking, but with porous-chrome rings this has been eliminated. Oil consumption is very good and fuel mileage has improved appreciably.

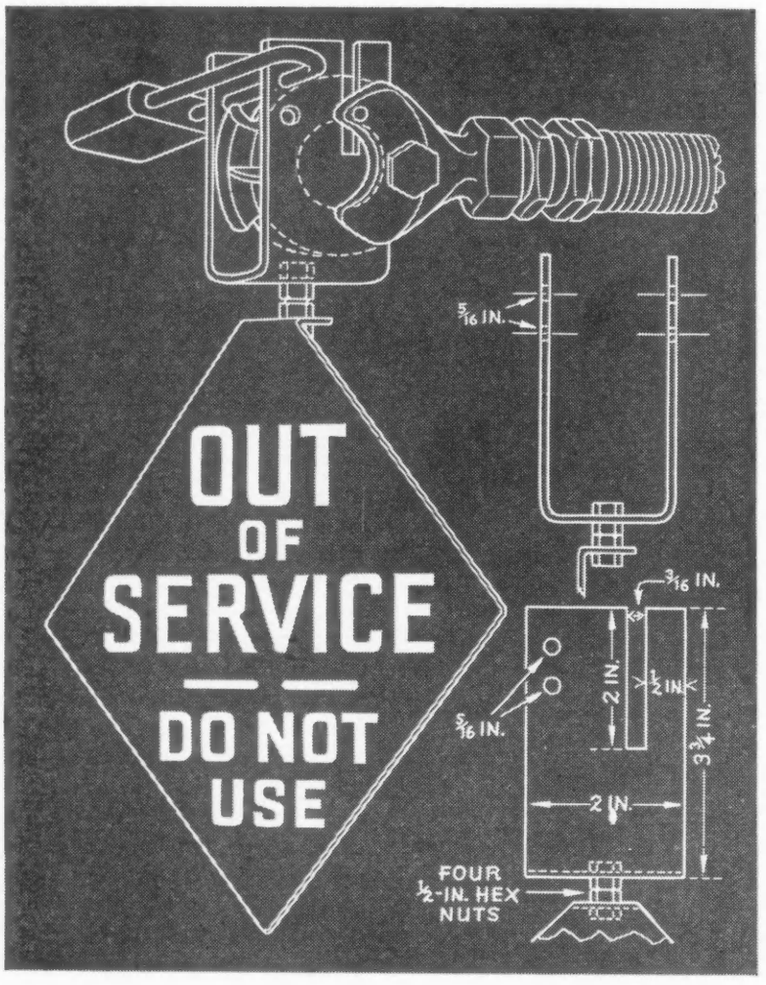
"All engines show more power, due to better blowby control and reduction of friction caused by the perfectly mated surfaces on the rings and cylinder walls."

.001 In. Wear in 40,000 Miles

ANOTHER example is reported by Mr. Rizzio of Rizzio Truck Company in Alhambra, Calif. He reports

(TURN TO PAGE 128, PLEASE)

SHOP HINTS FROM FLEET SHOPS



$25 HINT OF THE MONTH

Lock Prevents Trailer Movement

by Ed. Shaffer, Foreman, and Geo. Crum,
Davidson Transfer and Storage Co., Baltimore, Md.

One of the biggest obstacles to a successful PM Program is the use of vehicles which the shop tags out for some minor service, before the repair can be made. By the time the shop can get that vehicle back into the shop, the minor repair has become an expensive major repair.

We have had that happen many times when we lined up a semi-trailer outside the shop, with a work order slip instructing the next shift what was to be done. Sometime between the time when the semi-trailer was parked and the time that the next shift came on duty, the trailer would disappear, and, maybe, we wouldn't be able to get it back for several days.

We have overcome that obstacle with a simple U-shaped bracket shown in the accompanying sketch. We simply slide the bracket over the air brake hose coupling, lock it in position so that it cannot be coupled to a tractor and removed by anyone except the shop foreman in charge of making the repair, who gets the key from the foreman on the previous shift. By way of explanation, we suspended a sign, about 12 in. square, from the bracket containing the wording "OUT OF SERVICE—DO NOT USE."

We made the brackets out of scrap metal, bending each to fit over the trailer end of the air brake hose coupling, cutting out a slot for the coupling pin and two holes through which a padlock may be inserted. We drilled two holes so that we could use the same bracket for either the large or small couplings.

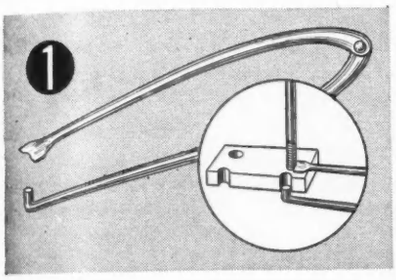
1. U-Bolt Tool

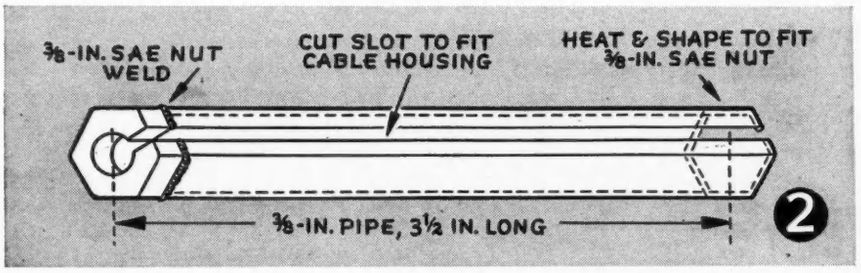
by Aro Lekander
Detroit Creamery Co.

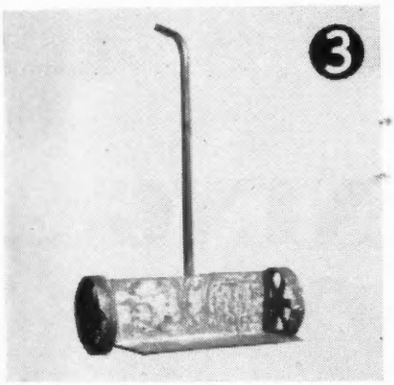
Here is a sketch of a U-bolt tong that I have used for years. Any handy man can make one up from scrap material.

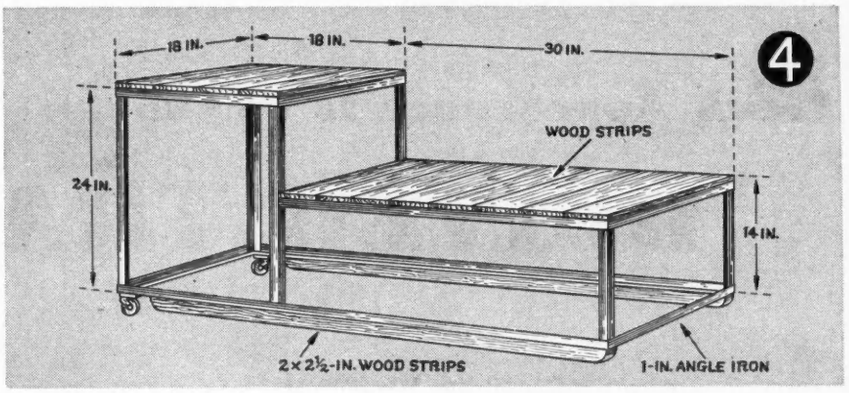
A ½-in. or ⅝-in. round stock will make a tong strong enough for most U-bolts. Two rods 12 in. long are flattened at the ends, a ¼-in. hole is drilled through them and they are pinned together with a rivet.

One piece is bent at a right angle, leaving a projection of ⅜ in. as









shown in the drawing. The other side of the tongs is flattened and notched to fit around a ¾-in. bolt as shown.

In use one leg of the tool is inserted into the hole in the axle plate and the other is pressed against the U-bolt thread, guiding it into the hole without damaging the threads.

2. Cable Wrench

by Joseph Dangelo
Win Cove Moving and Storage
Winton, W. Va.

Here is a handy tool for use when installing choke cables, throttle cables, etc., under the instrument panel. The tool is slipped over the cable so that the socket contacts the locking nut at the dash. A wrench is then used on the extension, and removal of installation is made easier.

A ⅜-in. pipe, 3½ in. long is slotted over the entire length as shown. A ⅜-in. nut is welded to one end and slotted to correspond to the pipe. The other end of the pipe is heat shaped to fit a ⅜-in. nut. By providing an extension of this nature, the tool will save a lot of time and temper when working under the dash.

3. Battery Cart

by Preston R. Coleman
Rainey Wood Coke Co.
Norristown, Pa.

We made a battery cart to move heavy units around the shop. It takes up little room and can be stored out of the way when not in use.

The material used consists of a length of ¾-in. pipe 40 in. long. A ⅛ in. piece of sheet plate is welded to one end of the pipe and a section is bent at right angles to hold the battery. An axle is bolted or welded to the plate and rubber tired wheels are attached.

4. Portable Stand

by David J. Seigel
Metropolitan Distributors, Inc.
New York

Climbing over fenders, standing on unsafe boxes and damaging the finish on vehicles can become serious. With a little time and material any one can construct a stand as shown in the drawing.

A portable stand or bench like this can fit into a narrow space, and can be wheeled about the shop as needed. It has two levels, the lower space for placing tools needed on the job. Dimensions, construction features and materials are noted on the drawing.

DRIVER QUIZ

Excerpts from written examination submitted to all new driver applicants

MECHANICAL KNOWLEDGE

Although automobiles are built today to run at high speeds, does it still cost more to drive at 50 miles per hour than at 35 miles per hour? (A) Yes (B) No

The oil gauge indicates (A) the amount of reserve oil (B) the pressure at which the oil pump is pumping oil (C) how much oil is in the transmission (D) the viscosity of the oil in the engine

Does over-inflation of tires increase traction? (A) Yes (B) No

"KNOW-HOW" OF HANDLING

Most automobile skids are the result of (A) fate and cannot be prevented (B) too much snow or ice on the road (C) over-inflated tires (D) driving too fast for the road condition

You are driving on a snow-covered road and have to make a stop quickly. The best way to do this is to (A) slam the brakes on hard (B) roll down the window and signal (C) turn off the ignition and apply the hand brake (D) pump the brake pedal

PM DRIVING

During normal operation, should the hand throttle be closed? (A) Yes (B) No

If the right wheels of the vehicle get on the shoulder of the road, you should (A) turn the steering wheel quickly to get back on the pavement (B) slow down gradually until you can steer back into pavement at a convenient place (C) slam on the brakes (D) speed up

SAFE DRIVING PROCEDURE

In driving any car for the first time, it is most important to check the (A) shackles for possible wear (B) headlights (C) brakes (D) reverse gear

If a trolley is discharging passengers where there is no safety zone and you drive up from behind the trolley car, you should (A) pass to the left (B) sound horn and pass slowly on right (C) stop back of the nearest door of the trolley

If you are following a school bus, is it ever good practice to pass while it is stopped to pick up or discharge children? (A) Yes (B) No

If a driver seriously injures a pedestrian who is legally at fault when struck, does the driver have to make out an accident report? (A) Yes (B) No

Truck Appearance Is Key to

DRIVER TRAINING . .

Plan includes careful pre-selection and continuing on-the-job training, but also lays special emphasis on keeping trucks in shape as a means of keeping drivers out of trouble

TO BE successful, a driver selection and training program must be tailored to the individual needs of the fleet for which it is intended. That, at least, is the primary premise upon which we fashioned our rather extensive plans. We also believe that many features of one plan can be adapted, either in whole or in part, to other plans just as we utilized the ideas of other fleets in setting up our program. That is the basic reason for sharing our ideas with COMMERCIAL CAR JOURNAL readers.

Tailoring of a training program not only includes the vocation and distribution of the fleet, but also the basic structure of the fleet organization. Our organization, for instance, has five separate departments, concerned in varying degrees with the operation of our 1200 trucks and 250 passenger cars. They are (1) the basic transportation department, responsible for overall maintenance and operation of the fleet and to which the writer is assigned; (2) sales department, to which all drivers are accountable; (3) industrial relations and personnel sections, which are responsible for overall supervision of manpower and write all wage contracts; (4) insurance department, which is obviously primarily concerned with safety and has a program of "No Accident" awards and bonuses that apply to all types of accidents including motor vehicle accidents, and (5) the advertising department which counts on the appearance of the fleet as an important factor in its sales promotion activities.

CCJ FLEET STUDY

DIVIDED INTO 4 PARTS
No. 1, Central Control
No. 2, Ice Cream Bodies
This article, Driver Training
No. 4, District Garage Operations

Driving Test Score Sheet provides adequate space for negative scoring of wide range of possible faults. Reverse side contains personal history statement, report of physical examination and score for written test

by G. C. STANCLIFFE
In charge of Driver Training
General Ice Cream Corp., Schenectady

ROAD DRIVING TEST SCORE SHEET

(Negative Scoring) (Short Form)

2 IN CAB—BEFORE STARTING ENGINE		( )
2 Entering Cab	(1)	
A Doors	(1)	
D Windows—Ventilation	(1)	
B Mirrors—Adjust	(2)	
C Seat—Adjust	(1)	
E Position	(2)	
Total Deductions	(8)	

4 STARTING ENGINE		( ) ( ) ( )
A Clutch Pedal—Depress	(2)	
B Gear-Shift-Neutral	(1)	
C Choke—Proper Use	(2)	
D Ignition—Starter	(1)	
E Starter—Release	(1)	
F Engine—Warm Up	(3)	
G Engine—Races	(5)	
G Oil Pressure—Check	(2)	
G Ammeter—Check	(1)	
Total Deductions	(54)	

5 STARTING VEHICLE		( ) ( ) ( ) ( ) ( )
A Steering—Still	(1)	
B Conditions—Check	(3)	
B Signal or Mirror	(2)	
C Gear—Selection	(1)	
D Brake—Release	(1)	
D Rolls Back—Grade	(5)	
D Engine—Races	(3)	
D Engine—Stalls	(1)	
D Starts—Roughly	(3)	
E Shifts—Roughly	(2)	
E Gear—Selection	(1)	
E Shifting—Eyes	(1)	
Total Deductions	(120)	

9 OPERATING VEHICLE		( ) ( ) ( ) ( ) ( )
A Position—Improper	(1)	
B Crowds Others	(2)	
C Passes—Curve, Hill	(5)	
C Cuts Back—Too Soon	(2)	
D Clutch—Rides	(5)	
E Speed—Not Even	(1)	
F Speed—Too Fast	(3)	
G Proper Lane	(2)	
G Signal or Mirror	(2)	
H Coasts—Out of Gear	(3)	
H Coasts—In Gear	(3)	
I Shift—Necessary	(1)	
I Shift—Wrong Gear	(1)	
J Clutch—Uses Roughly	(3)	
J Brakes—Uses Roughly	(3)	
K Holes—Hits	(3)	
Total Deductions	(260)	

GENERAL ABILITY AND BEHAVIOR	Poor	Fair	Good
Attitude	(20)	(10)	
Follows Instructions	(20)	(10)	
Nervous	(15)	(8)	
Over-Confident	(10)	(5)	
Alert but Relaxed	(10)	(5)	
Observes Conditions	(5)	(3)	
Responds to Conditions	(10)	(5)	
Drives Smoothly	(20)	(10)	
Total Deductions	(110)		

7 STOPPING VEHICLE AND WAITING IN TRAFFIC		( ) ( ) ( ) ( ) ( )
A Signal or Mirror	(2)	
B Brakes—Too Hard	(3)	
B Clutch—Release	(1)	
C Stop—Smooth	(3)	
D Vehicle—Position	(2)	
D Left in Gear	(2)	
D Clutch—Slipping	(5)	
D Creeping	(3)	
Total Deductions	(105)	

TRAFFIC SIGNALS AND SIGNS		( ) ( ) ( ) ( ) ( )
Stop Street	(5)	
Observe Conditions	(3)	
Signal—Beats	(5)	
Signal—Violates	(5)	
Officer—Disregards	(5)	
Signs—Disregards	(5)	
Total Deductions	(140)	

11 TURNING RIGHT		( ) ( ) ( ) ( ) ( )
A Signal or Mirror	(2)	
B Crowds Others	(2)	
C Speed	(1)	
D From Wrong Lane	(3)	
D Strikes Curb	(5)	
D In Wrong Lane	(3)	
D Into Wrong Lane	(3)	
Total Deductions	(95)	

11 TURNING LEFT		( ) ( ) ( ) ( ) ( )
A Signal or Mirror	(2)	
B Crowds Others	(2)	
C Speed	(1)	
D From Wrong Lane	(3)	
D Corner Too Wide	(2)	
D Corner Too Short	(3)	
D In Wrong Lane	(3)	
D Into Wrong Lane	(3)	
Total Deductions	(95)	

8 UP GRADE AND DOWN GRADE PARKING	Up ( ) Grade	Down ( ) Grade
A Signal or Mirror	(2)	
B Observes Conditions	(2)	
D Steering—Still	(1)	
F Smoothly	(2)	
H Hits Others	(5)	
I Hits Curb	(2)	
J Parked—Position	(3)	
L Hand Brake	(3)	
L In Gear	(3)	
L Ignition off	(1)	
Total Deductions	(48)	

TOTAL DEDUCTIONS ALL SECTIONS (975)

Date _____ Grade _____

Location _____

Name _____

Tested by _____

REMARKS _____

Pre-Employment Test to be given in type of vehicle with which driver is familiar.
Post-Employment Test (score in red) to be given (within 30 days) in company vehicle driver operates.

CIC 10-28-46

Six Objectives

ACCORDINGLY our driver selection and training program had to be set up in a manner that would coordinate the activities of all of these departments rather than to set up a conflict between any of them.

Unlike many plans, it is not based primarily on safety but rather on the preservation of equipment and the creating of a desire on the part of the driver to do his best in driving and caring for his vehicle. Safety, of course, is an underlying motive of all our objectives, but individually these objectives line up something like this:

1. Employ only men who are or have the qualifications of becoming good drivers.

2. Maintain the appearance of our trucks at such a high level that they will be outstanding to the public eye.

3. Have our drivers use good driving practices at all times to insure minimum operating costs, to avoid accidents and to create good-will through their courtesy and consideration for other drivers.

4. Effect complete coordination between the various departments concerned.

5. Set up the plan with sufficient flexibility as to permit efficient use under widely divergent circumstances (*i. e.*, some of our fleet units have more than 100 centrally located vehicles; others only a few at scattered points).

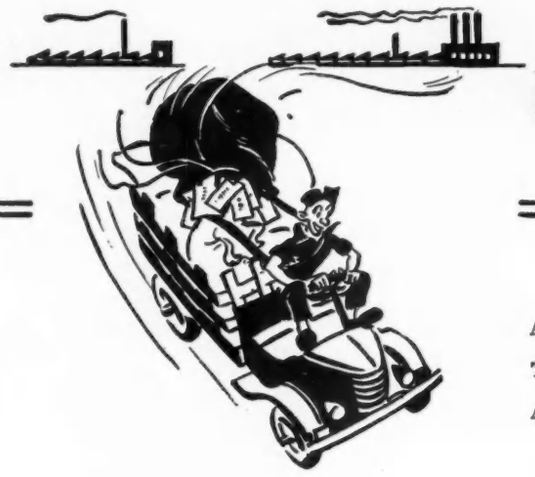
6. Offer the plan as a "package" so that it may be executed by local control units as circumstances and facilities permit.

New Driver "Musts"

TAKING up the objectives in the order mentioned, we are first concerned with the selection of new drivers. It might be well to state here that new driver applicants are first interviewed by the sales department to determine whether they have the proper attitude, characteristics, experience, qualifications, etc., required for the work involved other than driving. In many of the steps of our program we have set out what might be called "must" items followed by "desirable" items. In preselection we have conservatively listed only those in the "must" cate-

(TURN TO PAGE 116, PLEASE)

DETROIT DISPATCH



'48 Bright but Costly

GVW Rating Plates Coming

. . . Brake Rating Delayed

AMA Anti-Polaroid Now

Tire Prices on Way Up

Antifreeze Warning

by ***LEN WESTRATE***
CCJ Detroit News Editor

'48 Bright but Costly

In this last issue of 1947, a look back at the year indicates that while the truck industry has had troubles aplenty, things have improved considerably and the outlook for next year is pretty good, all things considered. New equipment is being built at a record rate and 1947 will see about 1.2 million trucks built, far above any previous year. Tires are in good supply, replacement parts not too bad, and trailers available in sufficient quantity. It looks as though next year will see the end of shortages altogether, and a buyer's market before Summer in most truck lines, particularly heavy-duty jobs. Costs, however, are still rising and a halt in 1948 is not apparent at this time.

GVW Rating Plates Coming

Beginning Jan. 1, most truck manufacturers will go to gross vehicle weight ratings on their trucks. The vehicle will bear an identification plate showing the manufacturer's name, truck model, chassis number, the manufacturer's GVW rating and certified net HP at a specified rpm. One reason for the change to GVW is that 26 states already are using this system for licensing, and many more are expected to adopt it in the next year or two. It also has the approval of the American Association of Motor Vehicle Administrators. It will provide a measure of performance by enabling the buyer to divide the weight rating by the net certified horsepower and get a rating of pounds per horsepower, indicating acceleration and other operating characteristics.

. . . Brake Rating Delayed

Manufacturer's brake certification on trucks, which has been under consideration for a long time, probably will not come for another year or more. Tests and ratings have been worked out and approved for single trucks, but the manufacturers want to wait until standards have been established for truck-trailer combinations. The AMA, Public Roads Administration, and representatives of the Truck-Trailer Mfrs. Assn. will make studies which are expected to take about a year. Brake certification is coming, however, since all concerned know that eventually state laws will require it if the manufacturers do not move first. It will mean a certification that the truck or truck-trailer combination of stated GVW will stop within a specified number of feet at a specified mph.

AMA Anti-Polaroid Now

Truck operators who have been hoping for adoption of Polaroid lighting on trucks and passenger cars are going to be disappointed by this news. The Engineering Liaison Committee of AMA has recommended unanimously to the American Assn. of Motor Vehicle Administrators that Polaroid lighting not be adopted at this time. The general belief of the industry is that it will be a long time, if ever, before it comes into use. The main problem is the tremendous difficulty in making the transition from present sealed beam lights to Polaroid, which in itself performs very well. If Polaroid equipment were installed on new vehicles after a certain date, it would take about five years before it was on most vehicles. During that time, other drivers would be forced to equip their own cars with special viewing screen to avoid being blinded. The Polaroid vehicle driver, also equipped with a viewer, would have no defense against upper beam lights of the sealed beam type, it is claimed, since he would have an extra set of lamps with permanently depressed beam for city driving which could not be directed at the other driver to "persuade" him to dim or to cut through his brights. Another disadvantage of Polaroid lights, it is said, is that when viewed through a screen, the halo or aura which they throw up is eliminated. Thus there is no warning to approaching drivers on hills or around curves, and the oncoming car seems suddenly to pop up out of the ground, a hazard when passing. The possibility of requiring all cars on the road to be equipped with Polaroid simultaneous with its adoption on new cars is considered out of the question, both from a legislative and practical viewpoint. The cost for installation on a new car ranges from $30 to $80 and would be more on trucks and old cars. The system requires a generator with about twice the capacity of current types, much heavier wiring, two relays, a viewing screen, and an extra set of city driving lamps. All in all, the practical difficulties of bridging the transition period are considered too great at present to attempt the adoption of polaroid now. Whether it ever will be done depends on new developments both in Polaroid itself and in the field of legislation.

Association Gang-Up

It's always helpful to know who your opposition is. A recent report states that the American Association of State Highway Officials has linked forces with the American Association of Railroads to fight further weight and length liberalization standards beyond those now approved by AASHO. Some members of the trucking industry are calling it an "unholy alliance." Comes also another adversary in the form of the American Automobile Association, which has called for reduction of size standards for trucks and buses to the AAA recommendations of 45 ft for combinations, maximum height of 12½ ft and width of 8 ft. It is opposed to 102-in. width for trucks and buses until rural highways are at least 20 ft wide. The AAA had some kind words to say about the trucking industry's courtesy program, but also had some sharp comment about the situation getting worse in respect to overloading, underpowering, racing down hills to gain momentum for climbing opposite grades, and inadequate brakes on a large percentage of trucks. It also passed a resolution asking for state standards governing minimum hill climbing and brake performance. These developments are a matter of concern to truck operators and point up the need for constant vigilance in public relations.

Tire Prices on Way Up

It looks as though the good break truck operators got on tire prices was too good

(TURN TO PAGE 146, PLEASE)

FLEET OPERATORS' EXPERIENCE HANDBOOK

Part 2

Man-Hours, Items and Periods for ENGINE TUNE-UP

Majority of fleets tune on regular schedules, mostly on mileage basis; check 29 electrical and mechanical parts, replace ignition points and spark plugs most frequently. One man averages 2.8 hours to tune engine, two-man crew spends 3.4 man-hours but makes 25 per cent more inspections

Analysis by ***A. W. GREENE,*** *Managing Editor, Commercial Car Journal*

THE TWO MOST OFTEN ASKED QUESTIONS relating to engine tune-up procedures perhaps are, "How long should it take to tune an engine? and "What operations should be performed in that time?"

The first of these questions is answered by the information contained in Table 7. The information contained in this table is so arranged that a comparison can be made of the average total man-hours required to tune an engine by one man and by tune-up crews comprising two and three men. In addition, the average elapsed time per tune-up also is supplied, with the thought that it may serve as a guide in expediting work.

Unless all factors are controlled, any information compiled on the time required to do certain work must of necessity be relative. In this case, some fleets are better equipped with tune-up instruments than others. Some fleets employ engine tune-up specialists who, conceivably, could do a given job in less time than that required by a regular mechanic. Some fleets confine a tune-up man's work to inspections and adjustments; other fleets have the tune-up man make all necessary repairs or replacements. Also, some fleets have an engine tune-up department where all instruments are close at hand and work proceeds with greater efficiency than in shops where the tune-up man is obliged to move the vehicle once or twice in the course of a tune-up job, or walk a given distance to borrow a needed tool or instrument.

Recognizing the importance of all these factors, only such information was used in the compilation of Table 7 as appeared to be consistent with the average in each size group (assuming that they all would be approximately similarly staffed and equipped) for comparable operations checked. Thus, in the column headed "Not Reporting," there actually are a number of fleets who supplied information, but, because it was at such wide variance with most fleets in that category, the information was not used because it would unbalance the majority.

From the total man-hour figures shown,

Time Required to Tune Engines

One man tunes engine in 2.8 hr; 2-man crew does it in 1.7 hr; and 3-man crew in 1.1 hr

Table 7

FLEET SIZE	CREW: One Man		2-Man Crew		3-Man Crew	
	Total Man-Hours	Total Elapsed Time	Total Man-Hours	Total Elapsed Time	Total Man-Hours	Total Elapsed Time
Up to 49 Trucks & Truck-Tractors	2.8	2.8	3.4	1.7	.....	.....
50 to 99 Trucks & Truck-Tractors	2.9	2.9	3.9	2.0	3.5	1.7
100 and Over Trucks & Truck-Tractors	2.7	2.7	3.0	1.5	3.0	1.0
Total & Average	2.8	2.8	3.4	1.7	3.3	1.1

ENGINE TUNE UP & PERSONNEL EQUIPMENT

it would seem that engine tuning by one man is a more economical and efficient practice than by a two-man crew because a 21.4 per cent time differential is shown, apparently in favor of one man. Actually, the two-man tune-up crews average approximately 25 per cent more operations than performed by one man.

Understanding of this table will be facilitated by reference to Table 6 in Part 1 of this survey (November issue) which gives a breakdown of how fleets employ shop personnel for engine tune-ups.

Items Comprising Tune-up Checks

ONE of the most interesting facts that emerged from this survey is a list of the various operations that constitute an engine tune-up. A total of 31 items were indicated in great enough number to warrant separate tabulation. These items will be found in Tables 8A and 8B.

Table 8A contains items related to the engine's electrical system. With the exception of the starter switch, the last item in this table, the majority of fleets check almost everything from the battery to the instruments on the dash in the process of an engine tune-up. Almost all fleets check the spark plugs, distributors and ignition timing, the first three items in the table. Battery cables, condensers and coils are checked by more than 75 per cent of the reporting fleets.

Table 8B contains the remaining items which fleet operators include in the engine tune-up checks. The first three items checked by most fleets are carburetors, fuel pumps and air cleaners, in that order. Fan belts, engine compression and fuel filters also are included by more than 75 per cent of the reporting fleets.

Upon close study of the items contained in Tables 8A and 8B, there appears to be much room for speculation as to why greater percentages are not indicated, especially for the fundamental parts generally accepted as being those a mechanic would check during an engine tune-up. This, indeed, requires explanation.

When this survey was first contemplated, as a result of majority suggestions by members of the Board of Experts, the advisory group of that Board was enthusiastic but the consensus was that certain information which might be received would be pretty well standardized.

"Everybody," said one fleet operator will check about half of these items. Surely, they all check the distributor, carburetor and fuel pump, for example," he said. The same thing applies to such items as spark plugs, compression, hose connections, and so on," he added.

A sampling of the majority of fleets constituting the advisory group proved him to be correct. Yet, when the returns came in from the Board of Experts, no 100 per cent agreement was found.

Taking the first three items in each table, we find that,

1. 97.98% fleets check spark plugs
2. 96.77% fleets check distributors
3. 93.15% fleets check ignition timing
4. 91.94% fleets check carburetors
5. 87.50% fleets check fuel pumps
6. 86.69% fleets check air cleaners

In an effort to determine why no 100 per cent agreement resulted, a thorough study was made of all information received. The following conclusions were reached:

1. Certain items are not checked at tune-up time because other organized shop procedures or PM methods obviate the need for such checking. For example, fleets that give their vehicles daily trip checks—embracing such itews as oil, water and battery—know that these items are in good condition. Consequently, they do not include them in their engine tune-up procedure.

2. When engine tune-ups are made shortly after a thorough overhaul, after or in connection with a PM check, the checks are likely to be confined to the particular parts with which the fleet is having trouble.

3. Some fleets, especially those that tune only when need is indicated or particular complaint made, do not cover all possible items at any time. These fleets also tend to replace questionable parts and adjust and repair them at leisure.

From these observations, it could be ar-

Electrical Items Included by Fleets in Their Engine Tune-up Checks

Majority of tune-up men check everything from spark plugs to dash instruments

Table 8A

FLEET SIZE	Number of Fleets Reporting	Spark Plugs Per Cent	Distributor Per Cent	Ignition Timing Per Cent	Battery Cables Per Cent	Condenser Per Cent	Coil Per Cent	Battery Water Level Per Cent	Generator Per Cent	Regulator Per Cent	Battery Carrier Per Cent	Wiring Per Cent	Starter Motor Per Cent	Battery Cell Condition Per Cent	Dash Instruments Per Cent	Starter Switch Per Cent
Up to 49 Trucks and Truck-Tractors	47	97.87	95.74	93.62	76.60	70.21	72.34	70.21	63.83	55.32	48.94	46.81	48.94	46.81	46.81	40.43
50 to 99 Trucks and Truck-Tractors	97	97.94	95.88	91.75	85.57	85.57	81.44	77.32	71.13	63.92	64.95	63.92	55.67	56.70	50.51	48.45
100 and Over Trucks and Truck-Tractors	104	98.08	98.08	94.23	83.65	80.77	76.92	74.04	77.88	74.04	62.50	63.46	65.38	54.81	52.88	54.81
Total and Average	248	97.98	96.77	93.15	83.06	80.65	77.82	74.60	72.58	66.58	60.89	60.48	58.47	54.03	50.81	49.60

Mechanical Items Included by Fleets in Their Engine Tune-up Checks

Majority of fleets give their engines a thorough mechanical inspection at tune-up time

Table 8B

FLEET SIZE	Number of Fleets Reporting	Carburetor Per Cent	Fuel Pump Per Cent	Air Cleaner Per Cent	Fan Belt Per Cent	Engine Compression Per Cent	Fuel Filter Per Cent	Hose Connections Per Cent	Valve Clearance Per Cent	Loose Bolts, Studs Per Cent	Fuel Lines Per Cent	Oil Filter Per Cent	Engine Oil Per Cent	Water Pump Per Cent	Radiator Water Level Per Cent	Governor Per Cent	Air Compressor Per Cent	Other Parts Per Cent
Up to 49 Trucks & Truck-Tractors	47	87.23	74.47	85.11	74.47	72.34	70.21	63.83	72.34	63.83	61.70	61.70	59.57	46.81	57.45	40.43	21.28	7.38
50 to 99 Trucks & Truck-Tractors	97	90.72	88.66	90.72	87.63	81.44	73.20	76.29	76.29	71.13	57.73	68.04	65.98	63.92	57.73	46.39	29.90	9.28
100 and Over	104	95.19	92.31	83.65	88.46	82.69	81.73	72.12	73.08	72.12	73.08	61.54	60.58	61.54	57.69	65.38	41.35	5.77
Total & Average	248	91.94	87.50	86.69	85.48	80.24	76.21	72.18	70.16	70.16	64.92	64.11	62.50	59.68	57.66	53.23	33.06	7.26

gued that some fleets really do not tune engines according to accepted practice.

The column in Table 8B, headed "Other Parts," contains reports of inspection of the following: Diesel fuel injectors, crankcase ventilators, thermostats, engine mounts, exhaust system, vacuum booster check valves and windshield wiper connections.

Parts Requiring Most Frequent Attention

THE next item of interest determined from the survey was a listing of the parts which required most frequent adjustment or replacement. This information will be found in Table 9.

The leading parts requiring attention most frequently are points and plugs. Four others are listed. In descending order of frequency they are: Fuel pumps, fan belts, battery cables, and fuel pump diaphragms. That is the line-up regardless of fleet size, and embraces fleets all over the country.

A slight variation of the overall picture will be found among the different size groups. Small fleets, for example, report fan belts to be their third most frequent part requiring most frequent attention, and fuel pumps the fourth. This is in reverse order to the national experience. These fleets also indicate a difference in the frequency which distributor rotors require attention.

Additional explanation may be required as to how fuel pump diaphragms were accorded sixth place, inasmuch as no majority is in evidence, as in the case of the first five listings. The method of scoring the frequencies was the same as that employed for determining the leading road failures, reported in the June, 1947, issue of COMMERCIAL CAR JOURNAL. All parts, of the six reported, were assigned point

Six Engine Parts Requiring Most Attention

Points are No. 1 item requiring adjustment or replacement most frequently; spark plugs and fuel pumps are next on list

Table 9

FLEET SIZE	Number of Fleets Reporting	Most Troublesome Parts						Not Reporting
		No. 1	No. 2	No. 3	No. 4	No. 5	No. 6	
Up to 49 Trucks & Truck-Tractors	30	Ignition Points	Spark Plugs	Fan Belt	Fuel Pump	Battery Cable	Distributor Rotor	17
50 to 99 Trucks & Truck-Tractors	61	Ignition Points	Spark Plugs	Fuel Pump	Fan Belt	Battery Cable	Generator Regulator	36
100 and Over Trucks & Truck-Tractors	62	Ignition Points	Spark Plugs	Fuel Pump	Fan Belt	Distributor Rotor	Fuel Pump Diaphragm	42
Total & Average	153	Ignition Points	Spark Plugs	Fuel Pump	Fan Belt	Battery Cable	Fuel Pump Diaphragm	95

Most Fleets Tune Engines Regularly

71.71% tune their engine on regular PM schedules, 28.29% tune only when needed

Table 10

FLEET SIZE	Number of Fleets Reporting	Tune-Up Periods		How REGULAR PERIODS are Set Up		
		Regular — Per Cent	Irregular — Per Cent	Part of PM Program — Per Cent	Independent Schedule — Per Cent	Not Reporting — Per Cent
Up to 49 Trucks & Truck Tractors	51	68.63	31.37	72.55	23.53	3.92
50 to 99 Trucks & Truck-Tractors	94	67.02	32.98	78.72	18.09	3.19
100 and Over Trucks & Truck-Tractors	106	77.36	22.64	80.19	16.04	3.77
Total & Average	251	71.71	28.29	78.09	18.33	3.58

Majority of Fleet Operators Schedule Tune-ups on a Mileage Basis

69.99% use mileage schedules, 3.33% tune semi-monthly, 26.12% monthly

Table 11

FLEET SIZE	Number of Fleets Reporting Regular Tune-up Schedules	MILES						WEEKS	MONTHS					Not Reporting
		1000 to 1500 — Per Cent	1600 to 2500 — Per Cent	3000 to 4000 — Per Cent	5000 — Per Cent	6000 to 10,000 — Per Cent	15,000 — Per Cent	Two — Per Cent	One — Per Cent	Two — Per Cent	Three — Per Cent	Five — Per Cent	Six — Per Cent	Per Cent
Up to 49 Trucks & Truck-Tractors	35	20.00	5.71	11.42	5.71	25.72	.....	2.86	22.86	.....	2.86	.....	2.86	.....
50 to 99 Trucks & Truck-Tractors	63	19.05	1.58	26.99	14.28	9.52	1.59	1.59	17.46	1.59	4.76	.....	1.59	.....
100 and Over Trucks & Truck-Tractors	82	19.51	15.85	9.76	14.63	8.54	.....	4.88	4.88	6.09	9.76	1.22	3.66	1.22
Total & Average	180	19.44	8.89	16.11	12.78	12.21	0.56	3.33	12.78	3.33	6.67	0.56	2.78	0.56

Why Fleets Tune Engines at Irregular Periods

Driver complaints of poor power and sluggish engines are leading reasons why fleetmen tune engines only when needed

Table 12

FLEET SIZE	Number of Fleets Reporting Irregular Tune-Up Periods	Driver Complains Poor Power — Per Cent	Sluggish Engine — Per Cent	High Fuel Consumption — Per Cent	High Oil Consumption — Per Cent	Other Reasons — Per Cent
Up to 49 Trucks & Truck-Tractors	16	43.75	75.00	31.25	43.75	6.25
50 to 99 Trucks & Truck-Tractors	31	83.87	41.94	35.48	32.26	3.23
100 and Over Trucks & Truck-Tractors	24	79.17	62.50	50.00	37.50	
Total & Average	71	78.87	55.34	39.44	36 62	2.82

values according to the frequencies reported by the fleets. Six points were given to a part listed as requiring attention most frequently. Five points were accorded a part reported as being the second in frequency of attention at tune-up time. Four points went to the third next most frequent part listed, three was given to the fourth, two to the fifth, and one point to the sixth part. When the points were totalled, the part receiving the greatest number of points was placed in the column headed "No. 1." The part receiving the next highest count was placed in the column under the heading "No. 2," and so on.

Similarly, when it came to determining which of the three different parts listed in the column labeled "No. 6" should be listed as the average for all fleets, fuel pump diaphragm was selected because it accumulated 69 points as against 57 for the generator regulator and 41 for the distributor rotor.

Fleets Tune Engines Regularly

THE regularity with which the Board of Experts tune engines is shown in Table 10. As a whole, 71.71 per cent of the fleets tune their engines on a regular scheduled basis, 28.29 per cent tune an engine only when it is not performing efficiently, and usually upon the specific complaint of a driver, as will be explained later.

Of the fleets that tune engines regularly, 78.09 per cent tie this work in with their regular preventive maintenance program, the balance maintain a separate regular schedule.

The schedules maintained by the fleets that tune engines regularly are worked out on both a mileage and a time basis. Just how these schedules are set up are shown in Table 11.

The mileage basis is the most popular, as evidenced by the fact that, cumulatively, 69.99 per cent of the fleets operate on this basis. There is a wide range in the mileage schedules in use. Some fleets tune as often as every 1000 miles, others work on schedules as broad as 15,000 miles with almost every possible combination in between.

Time schedules are divided into weekly and monthly increments, with monthly schedules outnumbering those worked out on a weekly basis, which, incidentally, fall into one group—every two weeks.

The most outstanding fact about these schedules is that none of the time or mileage periods stands out as the outstanding preference of the reporting fleets. It would seem that each fleet arranges its schedule according to its convenience.

The fleets that indicated that they do not tune engines periodically, show, by the following facts, that this phase of engine maintenance is employed principally as a remedial measure. A breakdown of the information obtained from this group is shown in Table 12.

Poor engine efficiency is the leading reason why fleets that do not maintain regular tune-up schedules will pull a truck into the shop for an engine tune-up. This is shown by the fact that 78.87 per cent of the fleets reported that they will tune an engine when the driver compalins about poor power, and by the fact that 56.34 per cent of the fleets tune when an engine becomes sluggish. In the latter case, no mention was made as to who says that the engine is sluggish—driver or mechanic. However, the percentages indicate an overlap, which seems to warrant the assumption that, in the first case, it is the driver's gripes alone that are responsible for the tune-up but, in the second case, it may be that an engine tune-up is made when a mechanic cannot obtain satisfactory results from an engine in the shop for general repairs.

Two other reasons—high fuel consumption and high oil consumption—also are given.

The column entitled "Other Reasons," contains a number of comments that have nothing to do with particular engine troubles. Each comment referred to specific operating conditions that made a regular tune-up schedule impracticable or impossible.

"We tune engines when we can find the time," said one fleet operator. His comment is typical of the group.

Most Fleets Road Test Tuned Engines

THE final fact obtained from this survey is that most fleets road test engines after a tune-up. Table 13 shows that 79.60 per cent fleets go through this procedure regularly and 20.40 per cent do not.

Actually, more fleets road test engines than shown by the figures but that is not part of their regular procedure. "If the inspector deems it necessary," said one fleet superintendent, "the engine is road tested, otherwise not."

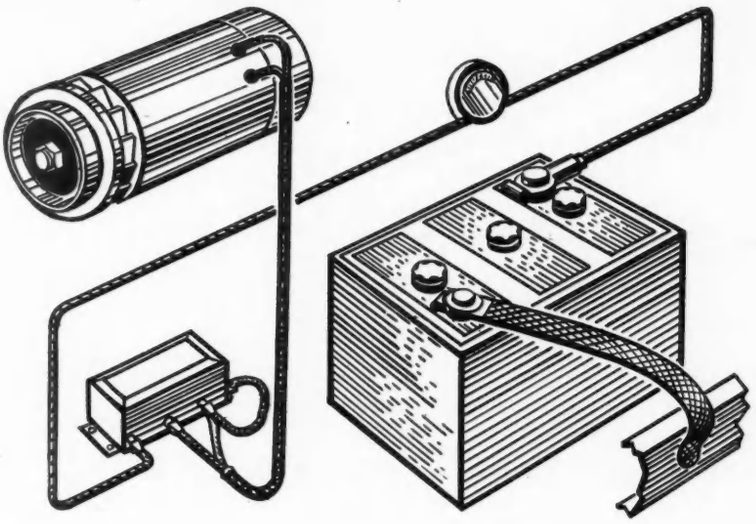
"About half of our engines are road tested," said another superintendent. "It all depends on whether or not we have the time."

Most Fleets Road-Test Tune-ups

79.60% fleets give tuned engines a road test before returning the vehicle into operation

Table 13

FLEET SIZE	Number of Fleets Reporting	Road Test After Each Engine Tune-Up — Per Cent	NO Road Test After Each Engine Tune-Up — Per Cent
Up to 49 Trucks & Truck-Tractors	49	79.59	20.41
50 to 99 Trucks & Truck-Tractors	97	79.38	20.62
100 and Over Trucks & Truck-Tractors	104	79.81	20.19
Total & Average	250	79.60	20.40



Three Guides To

Electrical System

Troubles

The battery, the starter, and the headlights tip off the mechanic in locating failures or potential breakdowns in the system

FAILURES of any unit in the electrical system need not be an operating problem—with proper and timely service. Most road failures and premature breakdowns arising with such units as the battery, generator, regulator, starter and lighting systems are a matter of development over a relatively long period of time, simply failing in the final stage of deterioration. This being true, then a high percentage of the electrical system potential failures can be "nipped in the bud" with a good routine for locating defects before they mature. The following trouble tips along with the check list will enable the mechanic to set up a workable system for tracing failures and cutting breakdowns to the lowest possible figure.

by M. K. SIMKINS

Technical Editor
Commercial Car Journal

With Battery as Guide

THE BATTERY, as the heart of the electrical system, is the logical point to start an examination for potential troubles. The battery will not only cause other units in the system to function improperly, but it will also show up the effect of maladjustments in other electrical units.

It must be remembered that all batteries leave the factory in perfect shape. They are subjected to rigid tests and meet high standards of efficiency before they leave the factory —but the manufacturer cannot guarantee that they will be cared for properly in storage or in use. If "fresh" batteries are installed, and if premature failure results, then it must be caused by improper care or operation.

One of the most prevalent causes of early failure is overheating, and this is usually the result of a faulty regulator which permits the generator to deliver excessive current. Overcharging decomposes the water of the electrolyte into hydrogen and oxygen gas. These gas bubbles tend to wash active material from the plates and carry moisture and acid from the cells in a fine mist. Furthermore, the decomposition of water leaves the acid more concentrated so that it is harmful to wood separators and negative plate material at high

(TURN TO NEXT PAGE, PLEASE)

. . . Electrical System Troubles

(Continued from page 53)

temperatures over a prolonged period of time. When high internal heat is created, corrosion of positive plate grids is accelerated, and the separators and negatives may become damaged. Another result is softening and distortion of the sealing compound on the battery case. Severe warping and buckling of the positive plates may result. And finally, prolonged overcharging will cause damage by corrosion of the cradle, cables and other electrical parts by forcing liquid from the cells.

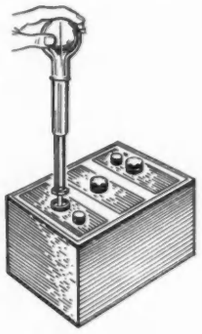
It should be noted that *prolonged* overcharging and overheating is mentioned in connection with these possible results. An operator may have a generator that is charging excessively and may not experience such conditions—especially if he is operating over short runs with frequent stops. Battery failure from overcharging may not develop until he has made an extended trip. Nevertheless, the possibility of failure does not justify the maladjustments, and proper steps to correct the trouble should be initiated.

Undercharging itself is a frequent cause of early battery failure. If the battery remains undercharged over a period of time, the plates may sulphate, harden and buckle. If the battery is allowed to stand in a discharged condition, the lead sulphate in time may fill up the pores of the separators so that charging will convert the deposits into metallic lead, and subsequent build-up may cause a short circuit within a cell. Batteries should not be allowed to stand idle in more than 75 per cent discharged condition for long periods of time.

Lack of water is another factor cutting battery life. If water is not replaced as soon as the level falls below the top of the separators, the acid will reach a high concentration and will char and disintegrate the wood separators and may permanently sulphate and impair the performance of the plates. It must be realized that it will be necessary to add water more frequently in summer than in winter, and more frequently when the vehicle is driven long and during hot weather.

Other premature battery failures can be attributed to pure abuse. Loose hold-downs will allow the battery to bounce, causing breakage of the container or causing the sealing compound to open up and the acid to leak from the cells. If this bouncing or vibration is excessive, the plates may break loose from the connecting straps, causing short circuits. On the other hand, too tight hold-down clamps may distort and crack the case, break partitions between the cells and allow electrolyte loss.

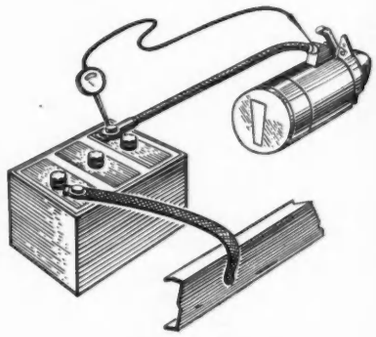
Testing Inaccuracies



IT WILL BE impossible, however, to determine the condition of the battery until an accurate check is made of the specific gravity as well as the voltage. The hydrometer will give an indication of the specific gravity condition and will measure the approximate capacity still available in the cell. However, a hydrometer reading should include a temperature correction when readings are taken at a bench after considerable charging. This is due to the fact that the acid volume expands when it is heated and shrinks when it is cooled. If the liquid is hot, the reading will be low; if the acid is cold, the hydrometer reading will be too high. Temperature correction amounts to about .004 specific gravity reading for each 10 deg. F. change in temperature from the standard of 80 deg.

Inaccurate results are obtained when checking the battery due to a low water level or due to taking a reading after adding water and before the water has mixed properly with the acid. Again gravity readings may be misleading if taken just after a battery has been discharged at a high rate since the acid has been weakened in and adjacent to the plates and has not had time to diffuse outwardly and mix with the stronger acid in the cell.

The hydrometer itself must be clean so that the float will not stick to the sides. The float must be air tight and must not touch either sides or the top stoppers of the barrel for an accurate reading. Defective instruments as well as improper use of test instruments may account for many inaccurate battery readings.



Battery Tests

IF THE specific gravity of the battery is above 1.225, it is probably O.K., but a rapid discharge test should be made for capacity. The open circuit voltage of a fully charge cell is about 2.1 volts for acid of about 1.280 specific gravity reading. The voltage of a cell on discharge, however, is influenced by the size of the cell as well as by the state of charge at the beginning of the discharge, the rate of discharge, the electrolyte temperature, the design and the condition of the battery. The average voltage of a cell on discharge while cranking, at 80 deg. F. may be about 1.95 volts per cell. A voltage reading of below 1.7 may denote a discharged battery. Overall voltage should be 5.1 volts or higher under a cranking test for satisfactory operation. If a difference of more than .15 volt is found on any one cell during the capacity test, the battery can be assumed to be unserviceable.

If the cells show more than 25 points' variation in gravity, one of the following conditions may be the cause: 1. a short circuit in the low cell; 2. a low electrolyte level due to spillage or leakage; 3. adulteration of the electrolyte with "dopes"; 4. a cracked or porous cell partition, or 5. natural disintegration of the cells due to age.

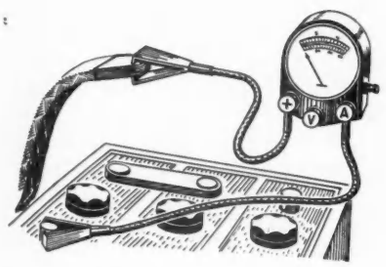
If a test with a voltmeter on the discharge test shows the proper voltage, and if the specific gravity measures up to standard, the trouble with a frequently discharging battery is

probably due to outside causes such as loose connections or grounds, short circuits, defective regulation or excessive use of the electrical units.

With Starter as Guide

STARTING MOTOR troubles can be divided into two classes, electrical and mechanical. However, the mechanic will be guided in his checks by the peculiar nature of the trouble. If the lights go out as the starter switch is closed, it may be due to a poor connection between the battery and the starter. If the lights dim as the switch is closed and the starter operates slowly or not at all, the battery may be defective. Mechanical conditions which could cause this condition are a tight engine, dragging clutch, a bent armature shaft, loose pole shoe screws or worn bearings, any of which may impose an undue heavy burden on the starter, reduce cranking performance and increase current draw. Misalignment of the starter with the engine flywheel, lack of bearing lubrication or a cracked starting motor housing will account for a similar condition. Other conditions which may be present with this reaction of the starter are thrown armature windings or commutator bars.

If the lights stay bright yet the starter will not turn the engine when the switch is closed, it is an indication of an open circuit at some point,



either in the cranking motor, in the starter switch or in the control circuit. A check can be made on the starting motor switch by placing a heavy jumper lead across the points, connecting the starter directly with the battery.

If the starter turns slowly and the lights burn brightly, it is possible that the commutator is dirty, that there are poor connections or defective leads, that the brush springs are broken or weak, that the commutator has high mica, or that there is an open field winding in the starting motor.

If the starter has been removed for service, or if proper operation cannot be obtained with it on the engine, it should be subjected to a no-load and a torque test. Special equipment should be available for this test, but it is the best way of obtaining full performance data on a cranking motor.

If the starter shows a low free speed and a high current draw with low developed torque on this test, it may be due to a dragging armature, a shorted armature or a grounded armature or field. A test lamp will show whether the field or armature is defective.

Failure to operate with a high current draw may be due to a direct ground in the switch, terminal or the fields. Another condition which would cause this is a dragging armature, shaft misalignment, or frozen shaft bearings.

If the starting motor will not operate but shows a high current draw, possible causes are an open field circuit, open armature coils or improper brush-to-commutator contact. If the armature is open, excessive arcing will be noted at the commutator bar. Broken or weak brush springs, worn brushes, high mica on the commutator will destroy proper brush contact and will result in burned commutator bars.

If the test shows a low no-load

(TURN TO NEXT PAGE, PLEASE)

TROUBLE SHOOTER'S CHECK LIST

I. With Battery as Guide

A. Frequent charge necessary

Insufficient charge rate
Slipping generator drive
Corroded battery terminals
Short circuit in charging circuit
Stuck cut-out in regulator
Excessive use of electrical units
Excessive drag in engine
Worn out, inefficient battery

B. High water loss

Too high charging rate
Old, inefficient battery
Leaking battery cell
Cracked battery case
Defective current regulation

C. Will not take full charge

Spilled electrolyte
Internal short circuit
Low water level
Impure electrolyte (doped up)
Worn out battery

II. With Starter as Guide

A. Excessive current draw

Worn armature shaft bearings
Misaligned armature shaft
Loose field pole pieces
Broken, jammed starter drive
Misaligned starting motor
Dirty, gummed armature
Shorted armature
Grounded armature or field
Resistance in engine parts
Use of too heavy oil in winter
Dragging clutch

B. Failure to operate

Poor battery ground
Broken teeth on flywheel
Defective starter switch
Shorted armature
Shorted field or brushes
Direct ground in switch
Burned contact points in switch
Improper seating brushes
High mica between commutator segments

C. Excessive noise at starter

Worn armature shaft bearings
Misaligned starting motor
Loose starter mounting
Sprung armature shaft
Insufficient lubrication
Chipped flywheel teeth
Defective starter drive

D. Burned commutator bars

Open circuited armature coils
Improperly seating brushes
Excessive battery voltage
Open field circuit
Excessive arcing at brushes
Long, sustained useage

III. With Lights as Guide

A. Excessive voltage drop

Corroded, rusty grounds
Insufficient capacity wiring
Frayed, broken cable strands
Cracked, leaking wire insulation
Loose connections

B. Lamps fail to light

Blown fuse
Burned out bulbs
Loose connections
Run down battery
Open circuit in wiring
Defective light switch

C. Lights flicker

Loose connections
Poor grounds at lamps

D. Bulbs burn out

Incorrect type of bulbs
Poor grade of bulbs
Corroded, defective grounds
Excessive battery voltage
Excessive charging rate
Short in wiring

Electrical Troubles

(Continued from page 55)

speed with low torque and low current draw, look for an open field winding with a test lamp. However, this condition may be caused by high internal resistance due to poor connections, defective leads, dirty commutator or any conditions listed under no current draw above.

A high speed with a low developed torque and a high current draw will indicate shorted fields, and replacement will be required in this case.

Starter Noises

MUCH can be learned about the condition of the starter from the noises present while it is turning the engine. Characteristic noises warn of impending troubles, and timely catching of these defects may save costly delays.

The most common starter drive noises are due to chipped starter pinion teeth, damaged flywheel teeth or a loose starter motor on the engine. However, misalignment and resultant noise can be caused by a sprung armature shaft, and the nature of the noise will point to the cause. Worn or dirty armature shaft bearing will produce a characteristic noise upon operation of the starter. In this respect excessive end play as well as shaft bounce will cause poor starter operation and noise. A broken drive spring can be easily detected as the engine will fail to turn over and the noise will assume a loud, high-pitched whirr.

Locking of the starter drive with the teeth in the flywheel can be caused by nearly any of the above mentioned conditions, so the mechanic should check peculiar starter noises early and effect a remedy. If, upon inspection, commutator bars are burned, it may be an indication of improper brush seating. An open circuit found at the commutator riser bar is usually the result of excessively long cranking periods which allows the heat to melt the solder at the bars.

Thrown armature windings or commutator bars, occurring on the overrunning clutch drive, are usually caused by excessive overrunning of the starter drive after the engine has started. Bendix drivers will sometimes stick in mesh and throw armature windings especially when the driver fails to remove his foot from the switch in time, or he leaves the throttle open too far. Broken Bendix drives may result when the driver closes the switch during engine rockback. Engine backfiring when cranking may account for the same condition.

Voltage Drops as a Guide

SINCE cranking performance voltage drops will be reduced by excessive electrical resistance, the mechanic will make a systematic check to determine where the fault is.

While the starter is cranking the engine, he will check the voltage drop between the frame and grounded battery post, the drop between the vehicle frame and the starter frame, the drop between the insulated battery post terminal and the cranking motor terminal stud. A drop of more than .1 volt with the starter cranking the engine is not permissible for best efficiency.

It is imperative that all wires be of sufficient size to carry the electrical load, and checks should consider this when locating voltage drops. Stranded wire and cable should be used to guard against breakage and all joints and connections should be cleaned tight for best efficiency. Terminal clips should be soldered to leads with rosin flux. Corroded terminals, cracked insulation and oil-soaked wires may produce excessive drops.

Wiring, Lighting Troubles

IF THE BATTERY has been determined as good, yet requires frequent recharging, it would indicate an electrical leak somewhere in the circuit. A voltmeter should be connected between the ground cable end and the ground battery post, and with all switches off, there should be no reading on the meter. If there is a voltage indication, a systematic check will be made of each unit in the system to determine the location of the leak.

In checking for current loss an ammeter will be inserted between the ground cable and the battery terminal. No current should be recorded on the meter with all switches off. The mechanic will continue in determining the current draw of the light switch, the dimmer switch, the stop light switch, the horn, the relay operation, heater, fan and each unit in the electrical system. Excessive drain of any of these units will require replacement or an overhaul of the unit.

If the lamps fail to light, the mechanic will consider the possibility of a burned out bulb, a broken wire, a poor ground at the lamp, a blown fuse, a defective lamp socket.

Flickering of the lamps can be caused by a loose connection, usually at the lamp socket or base. If this condition is accompanied by an unsteady ammeter, it is an indication that there is a loose battery connection, a loose contact at the light bulb or an exposed wire touching the frame at intermittent intervals.

If all lights burn dimly, it is an indication that the battery is low, that the bulbs are old, that ground connections are poor. If the lights dim appreciably when the starter pedal is depressed, it would indicate a weak battery or a loose battery ground. Lack of proper water level in the battery is a frequent cause of poor lighting.

Burning out of the bulbs may be either due to a poor grade of lamps, to use of improper size bulbs, or to excessive voltage in the line. Corroded battery terminals or loose battery terminal connections will contribute to early burning out of the bulbs.

On trucks equipped with third brush generator, the excess resistance caused by corroded terminals and connections forces the generator to operate at a higher voltage. This condition will subject the lamps and other electrical units to excessive voltage and shorten their life materially.

If the operator is experiencing trouble with high voltages and bulb burning, it may be the result of an old battery, a partially charged battery or one subjected to excessive heat. When new batteries are installed, it is recommended that the charging rate be checked, as a new battery with less internal resistance may allow for a higher charging rate even though regulation has not been changed.

Next month—Generator-Regulator Troubles

Record-Breaking ATA Convention . . .

Names new president and board chairman, backs Army plea for truck mobilization, discusses long list of technical problems. Private Carriers to Raise Conference Fund

by ***R. RAYMOND KAY***
CCJ West Coast Editor

MOBILIZATION of the country's trucking industry as part of our national security program to provide mobility in modern warfare was urged by Major General Edmond H. Leavey, Chief of the Army's Transportation, at the American Trucking Association's 14th annual convention in Los Angeles.

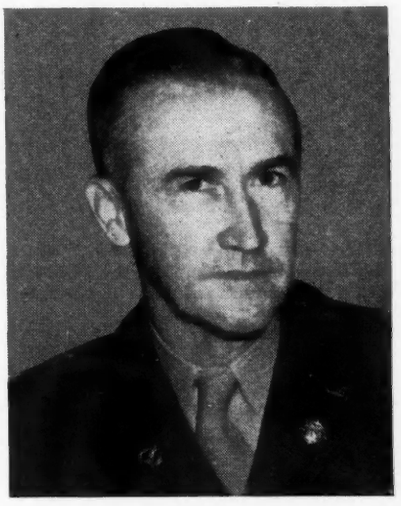
It was a record-breaking convention with more than 1500 delegates, almost double the registration of any previous year, and a total attendance over the 2000 mark. All of the meetings and conference of the five-day convention were well attended, with delegates showing an earnest interest in coping with problems of the industry and particularly with proposals from the Equipment & Maintenance and Safety & Operations sections.

For the first time in its history, it elected a new president, E. J. Buhner, president of Silver Fleet Motor Express, Inc., Louisville, Ky. Ted V. Rodgers, who retired from the presidency after fourteen years, received a high tribute for his role in organizing and directing ATA since its incorporation in 1933. He was named Chairman of the Board of Directors, a newly created post and an elaborate flat silver service of 300 pieces was presented to him and Mrs. Rodgers.

First vice-president H. D. Horton (left) presents 300 piece silver service (background) to Mr. & Mrs. Rodgers (center). At right, Mr. & Mrs. T. V. Rodgers, Jr.

Newly-elected ATA President E. J. Buhner of Silver Fleet Motor Express

Maj. Gen. Edmond H. Leavey outlined truck industry's part in Army Reserve

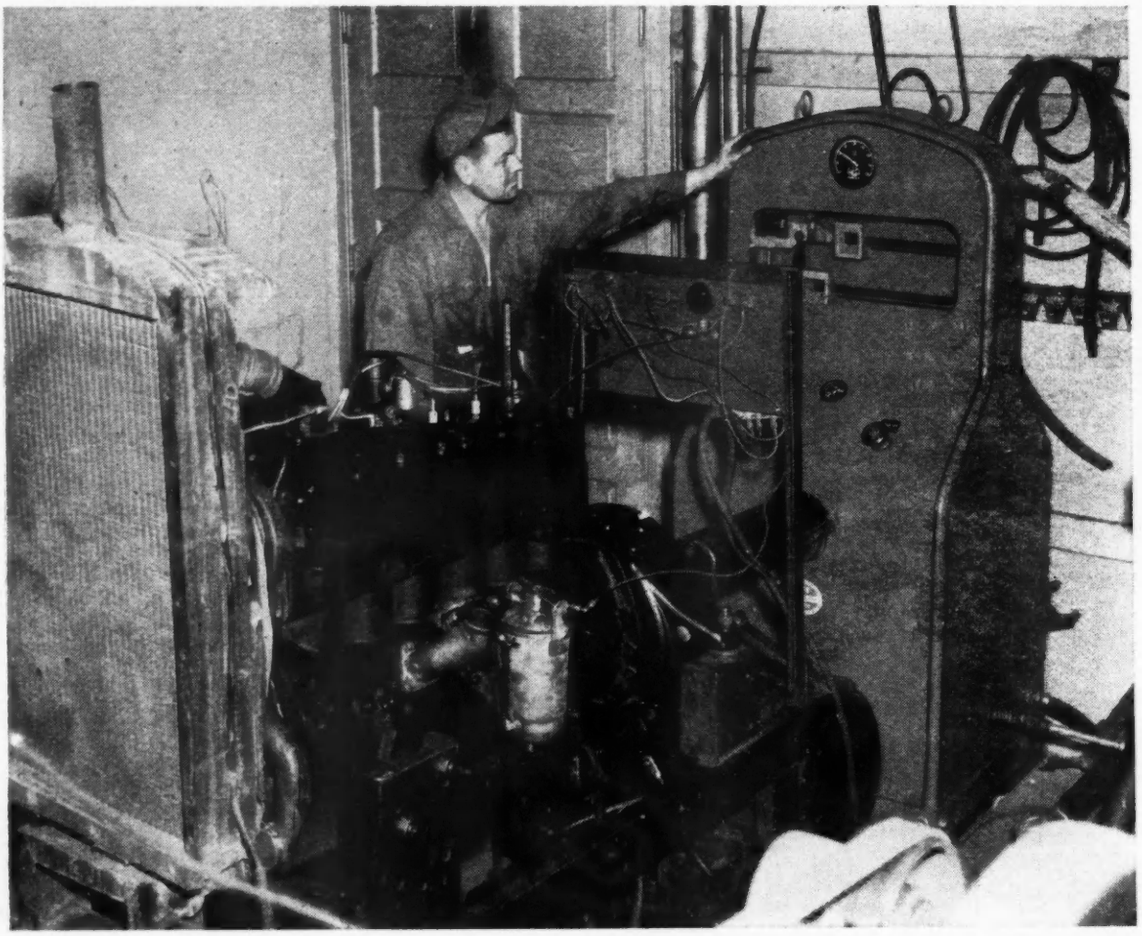


Equipment & Maintenance

PROPOSALS regarding minimum limits to be considered as adequate adjustments for brakes; and maximum periods between lubrication and inspection of trucks, tractors and trailers were among the subjects considered by the National Equipment and Maintenance Committee.

Test data from the Public Roads Administration regarding the stopping performance of some 3000 commercial vehicles was presented which indicated that poor braking performance frequently was caused by inadequate brake adjustments. These tests showed that because of poor adjustment the full capacity of the brake equipment could not be developed. After discussion, it was recommended that the minimum adjustments which could be considered safe for road operations were: with hydraulic brakes, one-half inch of

(TURN TO PAGE 109, PLEASE)



All rebuilt engines "do time" on the dynamometer—3½ hours at idle, 3½ at half throttle and 1 at full load

Two painters, one a sign man, keep Yellow Transit's 200 trailers up to the mark at cost of $50 per job

by HUGH GERNER

General Maintenance Superintendent Yellow Transit Co., Oklahoma City

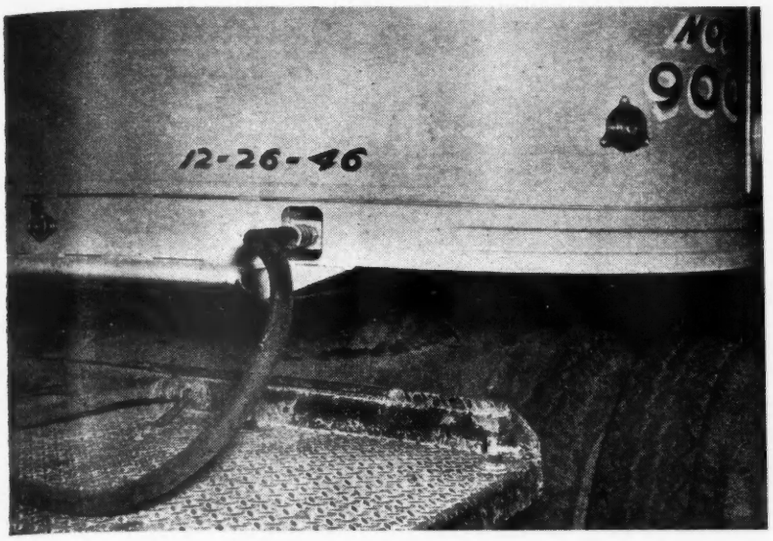
YELLOW TRANSIT CO. started in December 1929 with 2 tractors and three trailers. Today we have 488 units: 160 tractors, 200 trailers, 101 pickups and terminal trucks, and a miscellaneous group of passenger cars, wreckers, and terminal service units, which has a total for the group of 27.

Our maintenance headquarters is in Oklahoma City. Here we have a modern shop 75 by 250 ft. with 35 men assigned to maintenance work. The headquarters shop personnel breaks down into: 3 motor rebuilders, 2 transmission and rear end specialists, 1 electrician, 6 master mechanics, 7 trailer repair mechanics, 2 painters, 1 wrecker, 3 greasers, 2 washers, 1 steam cleaning man who handles both hot and cold solution tanks, 2 tire men, 6 men in the parts department and the maintenance bookkeeping and record department.

Our territory covers Kentucky, Indiana, Illinois, Missouri, Kansas, Oklahoma, Texas, and New Mexico.

We have terminal maintenance shops at Dallas with 15 maintenance men assigned; Baxter Springs, Kans., 19 men assigned; Kansas City, Mo., 11 men assigned; St. Louis, 11 men, and 1 man at Chicago and at Muskogee, both assigned to shop work.

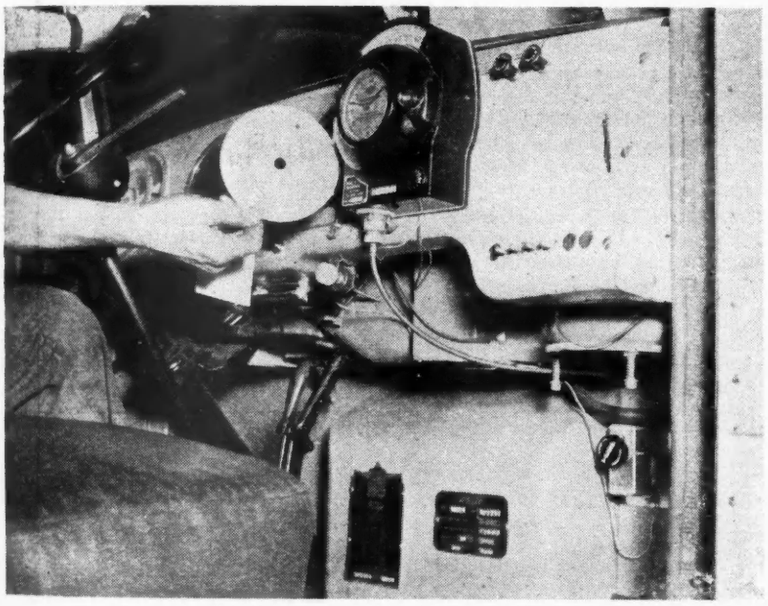
Our PM system has grown with our business from 2 units to 488, and been developed for our own needs and problems. We have tried



Date painted on front of trailer leaves no doubt when wheel bearings were packed

Carefully coordinated plan features periodic wheel bearing checks, lubrication, unit rebuilding, recording devices, tire branding and standardized vehicle painting

A New Pitch on PM



Recording devices in all tractor cabs provide accurate records of truck movements, cut down road calls

to hold forms to a minimum in the hope of making what forms we do use of real value to us.

Our PM bulletin board at Oklahoma City hangs in the main driveway to the shop. The first column is used for the equipment number. The next three columns are designated "A," "B" and "C," respectively.

In the "A" column we list equipment which is due in for the regular 30-day check. The equipment is listed by giving the date when equipment was last given the 30-day check. We have a form which we built up from our own experience giving 26 operations which must be performed for the A-Check. This form is signed by the mechanic doing the inspection work and turned in at the office.

On all tractors which will not come to our Oklahoma City terminal, A-Check forms are sent out and must be completed and sent in to us within 15 days after the check due date. If we do not receive this form on the 15th day, a special notice goes out to the maintenance man in charge demanding the report immediately.

The next column, headed "B," is a 90-day checkup. For this check we remove and overhaul the fuel pump or replace it with another and make the regular 30-day A-check as well. We have found that, while some units will run 4 to 5 months without road failures, we get best results making the fuel pump change each 90 days.

C—Check for Bearings Only

THE third column, the C-Check, is set for each five months. For this check we remove all wheels, wash and examine all bearings, and replace all worn or bad bearings. We also give full brake inspection and repair.

We checked 500 units on time for this and found that six months was the average for the 500 units for a wheel bearing job. So we set the

(TURN TO PAGE 98, PLEASE)

USE POSTCARD — NO STAMP NEEDED

PUBLICATIONS

A selected list of the latest literature—catalogs, pamphlets, charts—chosen to help fleetmen improve operation and maintenance

L137. Ring Handbook

A new mechanic's handbook on piston ring replacement, designed to pass on knowledge gained from many thousands of jobs as well as laboratory research, is now ready for fleet distribution.

This 40-page, illustrated manual offers not only ring installation techniques but includes a wealth of tested information on other engine repairs such as main bearings, valve guides, booster pumps, cooling systems, etc. Carefully drawn diagrams show exactly how each job is done.

The section on reboring takes up piston skirt beveling, pin fitting, surface treatment, piston clearances and cylinder finish. Practical tips on methods of attaining longer life and smoother operation will be found invaluable to shop personnel.

Here is just what shops need in the form of instruction material designed to enable mechanics to turn out better work easier and faster. Apprentice mechanics as well as oldtimers will appreciate receiving this up-to-date information. It should be made available to every shop. Just write L137 on the free postcard for your copy.

L138. Size, Weight Charts

"How Long is a Semi-Trailer" is the title of a revised pocket guide to trailer length limits now available to the fleetman. This chart has been prepared to show at a glance the approximate length trailer which may operate in the various states.

Sketches of trucks and semi-trailers, with maximum dimensions, are shown opposite the state group into which they fall. A quick glance at the diagrams will provide the operator with the information he needs. Sketches are approximately those of popular makes. To obtain the exact length of trailer allowed in any particular state, measurements of the unit in question are substituted for measurements shown. The difference between tractor length and maximum length for the particular state will give exact maximum possible length of trailer.

The other data chart provided with this is "Size and Weight Limits for Trucks and Truck-Tractors," listing height, length, maximum gross weights and formulas for all states. Fleetmen will want both charts as a quick aid to valuable information. L138 on the free postcard will bring a copy.

L139. Overhaul Manual

Here is an outstanding publication no shop can afford to overlook. It is an engine re-ringing, reconditioning, rebuilding manual prepared expressly for the fleet mechanic as an aid to better service. It consists of a wealth of timely service facts collected and tested by technicians who know and appreciate thorough, efficient engine repairing. The men who prepared this manual are authorities and offer this practical information in the hope that mechanics can improve their work and fleet operators can profit in longer, trouble-free engine service.

"I dreamed I died, and where do you suppose I dreamed I went?"

"Engineered Motor Repairing" treats each phase of service as a separate undertaking. Each important step in correct re-ringing is discussed in detail, with line drawings illustrating exactly how the job is accomplished. Several pages are devoted to progressive engine reconditioning practices. Illustrations not only show the proper steps in the service but also show proper use of the right tool for each job.

Write L139 on the free postcard for a copy now.

L140. Lubrication Data

An 8-page publication describing laboratory work which has attempted to relate apparent viscosity to low temperature torque, low temperature consistency and the dispensing characteristics of lubricating greases, is now ready for truck fleet distribution. Entitled "Flow Properties of Lubricating Greases—Relationship of Apparent Viscosities," the investigation points to the interesting possibilities of utilizing apparent viscosity determination of grease to (1) predict low temperature pumpability, and (2) make a more intelligent selection of greases to be handled in a given dispensing system.

The article shows how the pressure viscosimeter is used in measuring apparent viscosity and illustrates use of torque apparatus for testing lubrication characteristics. Another interesting section is a discussion of the method of determining grease penetration or consistency with the penetrometer.

Conclusions are reached to the effect that apparent viscosity data as obtained from the viscosimeter determinations may be useful in predicting low temperature performance of lubricating greases. The author finds that pumpability is directly related to apparent viscosity and suggests that this relationship be used by grease manufacturers in selecting greases for use in dispensing equipment for a particular application. Write L140 on the free postcard for a copy.

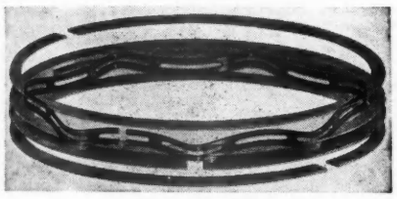
USE POSTCARD — NO STAMP NEEDED

PRODUCTS

The newest in replacement parts, accessories, shop equipment, supplies—illustrated and described in brief for the fleetman

P72. Expander Spring

Sealed Power Corp., Chicago, announces an improved expander spring for the Sealed Power MD-50 Steel Oil Ring. Among the advantages claimed for this new Sealed Power spring are increased direct ventilation for greater oil economy, more independent action for steel segments, free and unobstructed circulation of oil through all slots in cast iron spacer and oil holes or vents in the piston.



The design of the new spring compensates for greater variation in groove depth without loss of tension and assures greater bearing area at points of contact with both piston and ring, resulting in longer spring life, the manufacturer states.

Use Free Postcard For More Details.

P73. Sander Filler

A new and improved material for use in tractor-trailer and truck sanding equipment known as Bercall Abrasives—Truck Sander Fill—is now available from the Bercall Co., Paterson, N. J. Comprising hard burned, sharp, angular particles, it is said to cling to ice and offer better skid resistance than sand. Other claims for the material are that it is non-absorptive, dustless and bone dry, thus eliminating possibility of freezing and caking in the equipment.

Use Free Postcard For More Details.

P74. Service Lining

A new and improved brake lining, specifically designed for service duty trucks, is announced by The Raybestos Division of Raybestos-Manhattan, Inc. Raybestos service duty brake lining, known as PGT sets, will be factory-matched from seven different friction materials to meet the individual needs of the various makes of trucks.

Service duty brake lining sets will be packaged and will be available either in drilled and countersunk lining or undrilled for use with bonding equipment.

Use Free Postcard For More Details.

P75. Tail Gate Loader

A handy, low-priced hydraulic tail gate loader for trucks has been introduced by the Day Co., Chicago, to speed up loading and unloading.

The lift platform operates over the full distance from ground to truck floor level, raising and lowering loads up to 1200 lbs. The platform remains level throughout its entire travel arc, and swings up to serve as a tail gate when the truck is on the road.

The hydraulic pump is driven from the truck's standard power take-off and is controlled by a convenient lever, or the pump can be operated with a hand lever.

The unit—which fits most standard 1½-ton trucks—is furnished in a complete package, and takes only a few minutes to install.

Use Free Postcard For More Details.

P76. Gasket Tool

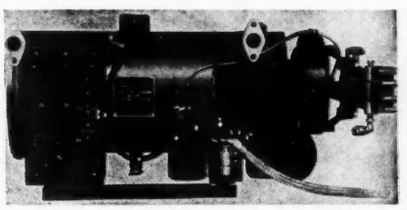
A new Cylinder-Head Gasket Centering Tool is available from Felt Products Mfg. Co., Chicago. This new tool is said to simplify, as well as speed up cylinder-head gasket installations by means of threaded, easily retractable centering plugs.

Fel-Pro Gasket Centering Tools come in sets of one 7/16 in. and one ½ in. tool.

Use Free Postcard For More Details.

P77. Cargoheater

Maintenance of selected temperatures for the protection of perishable cargoes in motor transport is now possible through use of a new, automatically controlled heating and ventilating system designed and manufactured by the South Wind Division of Stewart-Warner Corp., Indianapolis.



The Cargoheater features a thermostatically controlled, modulated flow of warmed, fresh air, supplying just the right amount of heat to automatically maintain desired temperatures. The unit is housed in a specially designed, all-steel cabinet and may be installed wherever heat is most needed or space is most available.

This unit generates its own heat by burning gasoline in a hermetically sealed, stainless steel chamber, thereby affording full heat in less than thirty seconds (regardless of engine temperature) and eliminating long, heat-wasting hot water supply hose.

Use Free Postcard for More Details.

P78. Nylon Diaphragm

Hygrade Products Co., Long Island City, New York, announces that its complete line of replacement fuel pumps, sold under the name "Monoflex," will be fitted in future with the new Monoflex "Life-of-the-Pump" Diaphragm. This diaphragm, for which the makers claim a longer life than the link or rocker arm, is reinforced with a nylon base, vulcanized with a synthetic substance.

Use Free Postcard for More Details.

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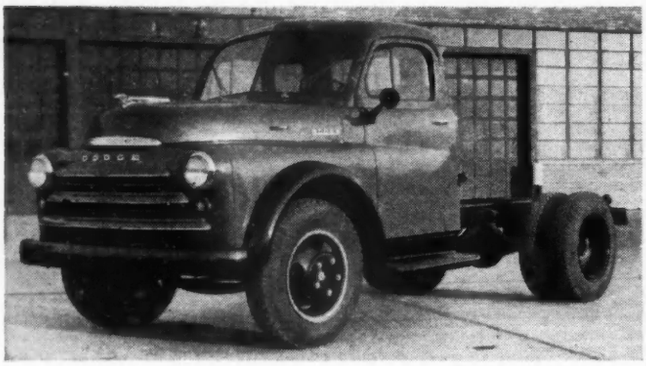
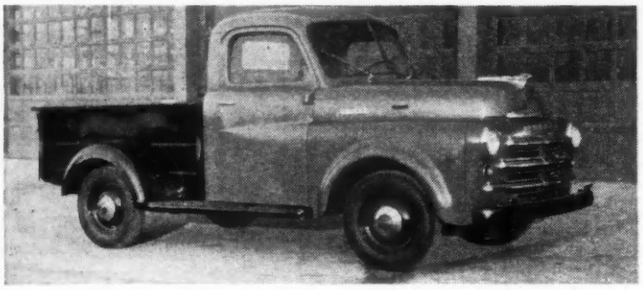


Above. Three-quarter view of new B-1-H tractor (15,500 lb GVW, 28,000 lb GTW) typifies styling of entire 1948 line

Below. Wheelbase of B-1-B pick-up has been shortened to 108 in. New longer running boards facilitate side loading



Rear view of B-1-FM (COE) with 107 in. wb. Note rear quarter windows, provided in all deluxe and custom cabs

DODGE Makes Many

Features include advanced styling, improved cabs,

A TOTAL of 235 model variations ranging from 4250 to 23,000 lb GVW and up to 40,000 lb GTW and including COE as well as conventional types, gives the new Dodge "Job-Rated" truck line a rounded coverage of the commercial vehicle field. This compares with 175 model variations in 1947.

In outward appearance the new trucks emphasize styling of advanced type which is carried out in the same theme on all models.

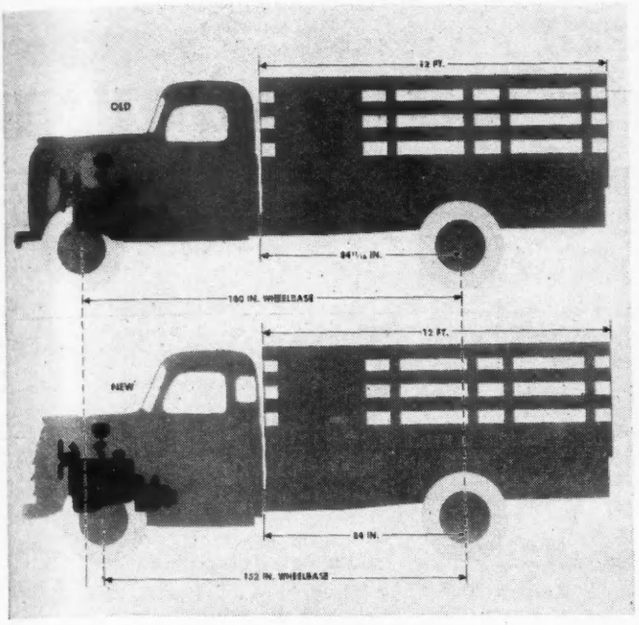
Noteworthy from the mechanical standpoint is that front axles have been moved back and engines forward. This places more of the chassis weight on the front axle and provides better weight distribution. The wheelbase for conventional models through the 2-ton has been decreased by 8 in., while the 2½ and 3-ton models have been reduced 6 in. Despite the shorter wheelbases, the new trucks have been engineered so that previous standard "CA" dimensions remain practically unchanged, thus making it possible to use the same length bodies as before.

The shorter wheelbases and wider tread front axle, together with cross steering, which is a new feature on all models except the COE's, provide new ease of handling and driving. The cross steering permits a 37-deg. turning angle both right and left. Drivers now can park, back into alleys or up to loading platforms with much greater ease.

Road shock through the steering wheel is greatly reduced by the cross

CONDENSED SPECIFICATIONS—DODGE B-1 SERIES

PREVIOUS MODEL	NOMINAL RATING	NEW MODEL	WHEELBASE RANGE (in.)	GVW RANGE (lb)	GTW RATING (lb)
WC	½-Ton	B-1-B	108	4,250– 4,850	.....
WD-15	¾-Ton	B-1-C	116	5,500	.....
WD-20, 21	1-Ton	B-1-D	116–126	5,500– 7,500	.....
WDX	1-Ton Power Wagon	B-1-PW	126	7,600– 8,700	.....
WF	1½-Ton	B-1-F	128–192	7,000–14,500	26,000
WFA	1½-Ton Dual-Purpose	B-1-FA	128–192	10,500–14,500	26,000
WFM	1½-Ton COE	B-1-FM	107–161	7,250–14,750	26,000
WFMA	1½-Ton COE Dual-Purpose	B-1-FMA	107–161	10,750–14,750	26,000
WFX	1½-Ton	B-1-H	128–192	15,500	28,000
WFAX	1½-Ton Dual-Purpose	B-1-HA	128–192	15,500	28,000
WFMX	1½-Ton COE	B-1-HM	107–161	15,750	28,000
WFMAX	1½-Ton COE Dual-Purpose	B-1-HMA	107–161	15,750	28,000
WH	2-Ton	B-1-J	128–212	10,500–16,500	29,000
WHA	2-Ton Dual-Purpose	B-1-JA	128–212	10,500–16,500	29,000
WHM	2-Ton COE	B-1-JM	107–161	10,750–16,750	29,000
WHMA	2-Ton COE Dual-Purpose	B-1-JMA	107,161	10,750–16,750	29,000
WHAX	2-Ton Dual-Purpose	B-1-KA	128–212	17,000	31,000
WHMAX	2-Ton COE Dual-Purpose	B-1-KMA	107–161	17,250	31,000
WJ	2½-Ton	B-1-R	130–229	13,500–18,500	34,000
WJA	2½-Ton Dual-Purpose	B-1-RA	130–229	13,500–18,500	34,000
WK	3-Ton	B-1-T	130–190	17,500–21,000	37,000
WKA	3-Ton Dual-Purpose	B-1-TA	130–190	17,500–21,000	37,000
WR	3-Ton	B-1-V	130–190	23,000	40,000
WRA	3-Ton Dual-Purpose	B-1-VA	130–190	23,000	40,000



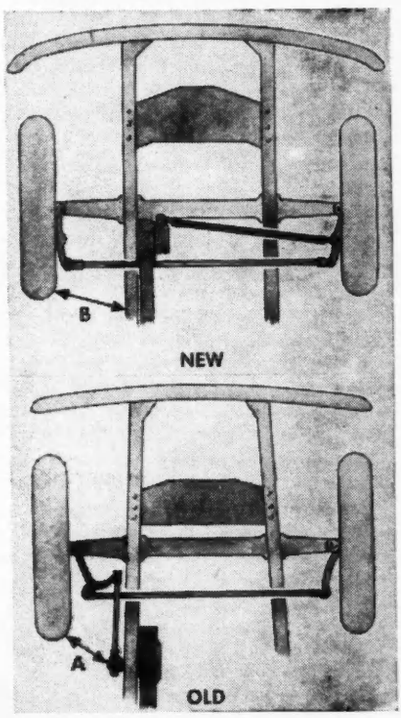
Front axles have been moved back, engines forward to permit shorter wheelbases without loss of load space

Cab seat is now 57¼ in. wide, has "Air-O-Ride" cushion using air and springs. Controls are moved forward

Changes in '48 Line

cross steering, engines forward, shorter wheelbases

New cross steering arrangement on all conventional models permits 37-deg. angle and 44-ft. turning diameter



steering, which has the drag link running parallel with the front axle.

New Cabs in Three Styles

IN addition, new and longer cabs are provided. Dodge is particularly proud of its new cabs—standard, de luxe and custom models—which have been completely redesigned to give more room, more visibility, more safety and more comfort for the driver. Comfort has been built into the completely new all-steel cabs after long research on the subject. They are roomy and provide maximum comfort because of several new features including 4-point mounting on rubber insulators.

Seat width is 57¼ in. to permit three large men to ride without crowding. Ample head room is provided with 36½ in. between seat and roof.

The chair-height seats can be adjusted 7 in. A convenient hand control is provided. They provide proper leg support under the knees. The back support also is adjustable for maximum comfort.

The Air-O-Ride seat cushion utilizes air in combination with coil

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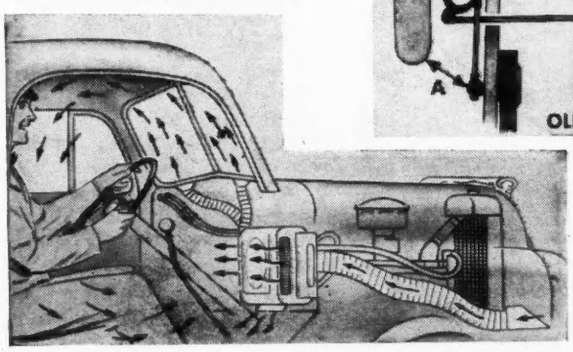
All-weather ventilation is provided by heater, duct and ventilator combination



WASHINGTON RUNAROUND

ICC Jurisdiction Upheld in Wage-Hour Overtime Case
Sulphur in Gas Under Test

3 Private Carrier Test Cases
Safety Hearings Late in '48
Army Truck Reserve Units

by GENE HARDY
CCJ Washington Bureau

ICC Jurisdiction Upheld in Wage-Hour Overtime Case

In a five to four decision handed down on Nov. 17 the Supreme Court ruled that drivers and mechanics are engaged in interstate commerce and hence not subject to the overtime provisions (par. 7) of the Fair Labor Standards Act, even though only 3 to 4 per cent of their company's business involved interstate shipments.

The case involved the J. F. Morris Cartage Co. of Ecorse, Mich. (suburban Detroit area) which renders a general cartage service but which is primarily involved in steel shipments. A breakdown of the company's activities revealed that approximately 35 per cent of its shipments consisted of the transportation of steel within plants, 61 per cent involved transportation of steel between plants and industrial establishments and less than 4 per cent involved interstate shipments. The latter category consisted primarily of loading or unloading interstate freight at railroad or shipping terminals within the greater Detroit area. The breakdown further revealed that two of its drivers made no trips involving interstate commerce.

In the majority opinion the Court cited a previous case stipulating that it is "the character of activities rather than the proportion of either the employee's time or his activities that determines the actual need for the Interstate Commerce Commission's power to establish reasonable requirements . . ." (which include safety and hours of service). The Fair Labor Standards Act was passed three years later than the Motor Carrier Act, and does not restrict the Commission's power.

Sulphur in Gas Under Test

The petroleum industry hopes to get a final answer on the much discussed question of whether sulphur is an undesirable element in gasoline as a result of extensive Army Department tests being conducted by commercial fleets. Trucks of all types and passenger cars, some 62 vehicles in all, are to be used by the fleets. The tests are to be run under all types of conditions and will utilize various classes of special fuels. About 1½ million vehicle miles will be run to determine optimum sulphur content. Results will determine sulphur content in gasoline specifications for both Army and Navy as well as other government agencies. Primary reason for using commercial fleets in the tests is that more normal conditions can be approximated than if they were held at Fort Knox as originally planned. Fleets cooperating in the tests are those owned by the Union Highway Co., Los Angeles, Calif.; Pacific Telephone & Telegraph Co., San Francisco, Calif.; Gordon Baking Co., Bauman Dairy, and American Telephone & Telegraph Co., all of Chicago; Kroger Grocery & Baking Co., St. Louis, Mo.; and the Harrisburg Street Railway Co., Harrisburg, Pa. The Harrisburg company will use busses in their portion of the work.

Army Truck Reserve Units

The trucking industry continues to add affiliated reserve units to the Army's Organized Reserve Corps. Included among the new units and the organizations sponsoring them are the following: 776th Transportation Truck Co., Cantlay & Tanzola, Inc.; and Headquarters and Headquarters Detachment, 820 Transportation Truck Battalion, the Motor Truck Association of Southern California, both of Los Angeles; 819th Transportation Truck Battalion (Heavy), Sacramento Valley Unit, Truck Owners' Association, Sacramento, California.

Also, Headquarters and Headquarters Detachment, 815th Transportation Truck Battalion, Colorado Motor Carriers' Association, Denver; Headquarters and Headquarters Co., 436th Highway Transportation Service, Florida Trucking Association, Tampa; Headquarters and Headquarters Detachment, 827th Transportation Truck Battalion (Heavy), Indiana Motor Truck Association, Inc., Indianapolis; and the 730th Transportation Truck Company (Heavy), Nevada Motor Transport Association, Reno.

3 Private Carrier Test Cases

The ICC now has before it cases involving all three types of procedure on which it can establish the status of private carriers. The latest to come before the ICC was a complaint by a for-hire carrier, the Steel Transportation Co., Inc., directed against the Columbia Transfer Co.; and the Marsh Steel Corp. The complaint alleges that Columbia Transfer and Marsh Steel are, by reason of their leasing agreement, subject to the provisions of the interstate commerce act covering for-hire carriers. The other cases involve the only other methods of procedure available: (1) The Lenoir Chair Co. and Schenley Distillery Corp., cases in which application was made by the carrier for determination of status and (2) the Burlington Mills Corp., investigation initiated on the commission's own motion.

Saddle Mount OK Expected

The Interstate Commerce Commission will probably permit the use of dual saddle-mounts in driveaway operations as a result of testimony presented at hearings which were concluded on Nov. 18. For the Commission to follow any other course would mean that the record was being completely overlooked, for there was no disagreement as to the safety of such methods. In fact, the ICC's own safety experts are convinced that such operations are entirely safe if properly handled.

It is also likely that the Commission will approve the transportation of used cars by means of tow-bars, so long as some mechanism is used to steer the towed vehicle. There will probably be some limitation as to the age of the vehicle which may be towed in such a manner.

Safety Hearings Late in '48

A digest of the testimony presented by carriers and other groups on the revision of the ICC safety regs has been completed by Section of Safety. Work is underway on a revision of the proposed regs based on this digest. The new draft will not be ready before late spring and public hearings will probably not begin until summer.

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Can We Spot

Accident-Prone Drivers?

Fleet operators and psychologists air views on driver selection and training at commercial vehicle sessions of National Safety Congress

by ***RANDALL R. HOWARD***

WHAT is being done nationally —and what should be done—to select, train, and keep motor vehicle drivers who will have a minimum of traffic accidents?

This was the problem which representatives of fleet operators from all parts of the United States threshed about through the six lively sessions of the Commercial Vehicle Section of the National Safety Congress, held recently in Chicago.

At the most heavily attended single session there came a clash of opinion between practical fleet operators and psychological experimenters, as to how "safe drivers" can best be developed. This was a group meeting of the Commercial Vehicle and Driver Education units of the National Safety Council, at which professors in psychology and other research departments of seven different educational institutions were featured. The crowded attendance made it necessary to transfer this meeting to a much larger hotel conference room.

The question for operators at this and other sessions was: Have we yet developed methods or "norms" whereby a driver, or potential driver, can be spotted in advance as "accident prone"—before he is turned loose alone on the highway in charge of a valuable vehicle and cargo?

The personnel problem which this question implies was brought out clearly at the first Commercial Vehicle session, in the "Fall Roundup" remarks of the General Chairman, Edward J. Emond, Director of Automotive Safety, Armour & Co.

COMMERCIAL VEHICLE COMMITTEE AND GUESTS. Seated, l. to r.: C. D. Calkins, Pacific Motor Trucking Co.; L. A. Strain, Petroleum Trans. Co.; H. J. Ericsson, Refiners Transport & Terminal Corp.; K. N. Beadle, Pacific Intermountain Express Co.; H. M. Clayton, Memphis Light, Gas & Water Div.; J. P. Hightower, Penna. Greyhound Lines; H. D. Scheffer, Auto Owners Insurance Co.; E. J. Emond, Armour & Co. (Retiring Chairman); J. A. Ebeling (New Chairman), Olson Trans. Co., Chicago; S. E. Praty, Jr., Heldt Bros.; I. E. Johnson, Carolina Coach Co.; K. E. Ketzel, Fred Olson & Son Motor Service Co., and Don E. Townsend, Dixie-Sunshine Trailways. Standing, l. to r.: H. G. Martin, Pacific Motor Trucking Co.; A. Ewing Greene, Mason & Dixon Lines, Inc.; W. T. Gowans, Smokey Mountain Trailways; Joseph Grumme, Jr., Silver Fleet Motor Express, Inc.; M. R. Jensen, Consolidated Freightways; R. P. Austin, Fleet Safety Eng., National Safety Council, and D. S. Berry, Traffic & Transportation Div., National Safety Council.

Fleet Responsibilities

A. C. HORROCKS, Public Relations Dept., Goodyear Tire & Rubber Co., outlined his opinions as to the "responsibility" of a fleet operator to his drivers. First, he should get on a good understanding basis with each driver. The driver also wants a safer highway and job security and other rewards, and he must be made to realize that his part is good personal driving habits. The appeal must be through the "seven basic human emotions." The most pertinent appeals will be to his "pride" and "self evaluation." This will justify frank personal talks as to why he should, and how he can achieve a good driving record.

Milton D. Kramer, Asst. Dir. of Center for Safety Education, New York Univ., followed with a talk on "How To Teach Safety To Drivers." His approach was more psychological. He first reminded conferees that safe highway driving is a double-pronged problem for the trucking industry. First, mounting maintenance and insurance costs. Second, as per a recent public opinion poll, some 70 per cent of the public apparently still believe that trucks are not paying their "fair share" of highway costs.

Skill vs. Attitude

AS to tests for safe driver selection, he thinks the chief emphasis should not be on driving skills, but

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1947 New Truck Registrations by Makes by States*

STATE		Auto-car	Brock-way	Chev-rolet	Dia-mond T	Divco	Dodge	Fed-eral	Ford	FWD	GMC	Inter-na-tional	Mack	Osh-kosh	Reo	Ster-ling	Stude-baker	Ward La France	White	Willys	All Others	Total
Alabama	Sept.			278	5		93	4	140		22	91	4		8		19		6	41	9	720
	9 Mos.	4		3441	66	12	1689	55	2922	1	690	1568	61		195		367	1	128	747	60	8,401
Arizona	Sept.			103	2	3	69		110	2	14	55	3		12	2	38		1	27	1	28
	9 Mos.	4		814	17	8	459	16	883	4	222	303	9		88	4	219		32	245	36	442
Arkansas	Sept.			495	4		92	5	248		37	121			7		32		6	60	3	1,110
	9 Mos.			3443	68		1348	32	3269		597	1192	17		80		413		55	710	24	11,248
California	Sept.	26	7	1394	35	14	843	22	1192	23	203	584	51		39	9	343		73	232	86	5,176
	9 Mos.	291	42	9717	350	212	6510	140	9708	138	3175	4945	279		442	91	2785	6	455	1576	727	41,589
Colorado	Sept.	2		287	8	8	101	3	247	2	44	161	6		10		35	2	10	100	7	1,033
	9 Mos.	22		1729	89	38	887	31	1913	63	391	1053	39		84		295	2	58	530	51	7,275
Connecticut	Sept.	10	9	126	6	3	87	13	98	5	26	124	16		4		51		8	59	8	653
	9 Mos.	146	117	1276	96	63	869	123	1018	20	344	1052	208		99	5	351		135	308	69	6,299
Delaware	Sept.	1		48	2	1	34		53		8	31	1				12		2	8	4	205
	9 Mos.	15	19	466	15	14	371	1	545	4	120	304	14		19		92	1	20	77	17	2,114
Dist. of Columbia	Sept.		1	61		19	29	3	56		10	27	2		8		8		3	3	1	231
	9 Mos.	7	18	503	38	90	382	22	591		216	308	25		43		99		31	39	14	2,426
Florida	Sept.	2		516	20		225	8	346		45	180	20		12		100		7	109	22	1,612
	9 Mos.	32	1	3904	130	29	1848	61	3508	34	679	1469	187		181		629	3	140	746	126	13,707
Georgia	Sept.	1		684	19		252	2	386		68	218	6		15		77		20	102	10	1,860
	9 Mos.	7	2	4374	148	8	2255	52	4584	1	755	1782	134		202	1	587		195	785	59	15,931
Idaho	Sept.	1		137	5		41	9	97		11	60	4		9		39		4	54	3	474
	9 Mos.	8		1108	55	14	542	44	1046	6	258	623	13	1	61	2	302		16	349	47	4,495
Illinois	Sept.	7	3	956	109	38	458	27	651		94	538	29		44	2	166		39	230	27	3,418
	9 Mos.	207	50	8891	882	307	5150	199	8023	8	1891	5123	306		639	12	1610	3	518	1466	321	35,606
Indiana	Sept.	2	9	661	28	24	294	19	459	4	95	349	18		39		136		42	129	20	2,328
	9 Mos.	26	100	4221	285	121	2902	121	4275	14	1095	3106	129		346		1360		318	1001	196	19,616
Iowa	Sept.			403	38	12	176	12	367	1	74	363	15		24		95		25	194	7	1,806
	9 Mos.	4	2	3633	236	48	1989	49	3641	16	605	2459	124		229		817	2	123	1162	67	15,206
Kansas	Sept.			305	30		105	13	273		35	181	3		9		60		18	99	8	1,139
	9 Mos.	9	1	4248	204	22	1422	113	3393	1	615	1792	37		163		741		132	455	55	13,403
Kentucky	Sept.	1		462	20	1	188	21	356	1	56	174	6		16		55		13	164	16	1,550
	9 Mos.	14		3320	119	18	1712	88	2899	1	641	1720	68		170		489		107	1327	87	12,780
Louisiana	Sept.			394	29		153	5	293		42	185	8		15		51		5	89		1,269
	9 Mos.	12		2659	130	13	1336	34	2537	1	439	1261	88		112		519		116	602	19	9,878
Maine	Sept.		7	207	5	2	96	8	188		38	140	20		24	2	67	1	8	55	5	873
	9 Mos.	22	28	1329	18	16	848	56	1599	7	338	813	94	12	110	12	298	3	68	287	49	6,005
Maryland	Sept.	9	9	291	2	22	149	10	183		35	95	13		13		42	1	6	46	10	936
	9 Mos.	70	78	2324	61	113	1507	97	2079		488	1201	147		194		425	21	127	369	64	9,365
Massachusetts	Sept.	9	14	198	22	25	163	7	269		55	157	19		11	6	60	1	26	46	17	1,105
	9 Mos.	205	188	2142	179	226	1850	73	2833	5	745	1560	310	1	202	88	526	31	285	405	99	11,953
Michigan	Sept.	6	13	445	21	56	292	27	392		48	217	12		35		73		25	116	21	1,799
	9 Mos.	68	49	5365	268	319	4431	385	6347	1	1384	2473	112		645	1	1086	16	233	1338	261	24,782
Minnesota	Sept.	6		536	20	16	226	54	463	2	65	319	12		17		101		36	136	22	2,031
	9 Mos.	44	2	3247	158	64	1966	167	3505	29	642	2020	102	7	116		686	12	245	531	82	13,625
Mississippi	Sept.			372	12		96		247		43	93	20		3		37		10	26	3	962
	9 Mos.	2		3250	65	2	1296	25	2873	1	547	1055	53		88		400		78	694	20	10,449
Missouri	Sept.	2		714	29	7	221	15	482		93	332	20		13		94		24	161	11	2,218
	9 Mos.	21	8	5652	235	97	2720	107	5154	3	1085	2770	101		190		857	3	251	1168	90	20,512
Montana	Sept.	3		235	8		117	5	156	13	23	108	1	1	8		25		7	89	11	810
	9 Mos.	4		1482	69	3	894	22	1259	16	270	784	5	1	61	2	335		46	799	44	6,096
Nebraska	Sept.	1		183	19		102	10	175	2	45	181	10		10		54		22	72	6	892
	9 Mos.	5		2118	185	7	1150	55	2040	27	415	1415	103	3	107		496		178	692	30	9,026
Nevada	Sept.			27	3		19		25		4	16			3		7			8	3	115
	9 Mos.	8		226	19	2	188	2	255	7	66	163	2	1	15	2	66		8	58	19	1,107
New Hampshire	Sept.	1	1	80			29	1	54		14	32	9				10		1	15	6	253
	9 Mos.	22	8	634	23	11	457	15	643		143	368	102		69	14	129		44	179	28	2,889
New Jersey	Sept.	25	45	448	30	26	291	12	303		78	242	93	1	27		100	1	17	113	31	1,883
	9 Mos.	264	375	3247	302	236	2076	137	2954	12	1053	1921	542	1	183	4	656	36	297	591	159	14,946
New Mexico	Sept.			114	5		46	3	62		16	40	2		2		25	1	7	18	1	342
	9 Mos.			1068	51		528	25	737	5	248	407	31		33		180	2	44	146	12	3,517
New York	Sept.	76	103	882	74	47	787	40	734	13	160	534	187	1	98	3	191	14	115	206	48	4,313
	9 Mos.	746	1180	8005	755	348	7106	397	8037	104	2546	5334	1642	45	852	56	1690	147	1079	1708	473	42,250
North Carolina	Sept.	3		747	12	4	228	11	493		27	159	35		19		88		20	187	17	2,050
	9 Mos.	30	11	5058	102	26	2432	122	4469	10	518	1604	273		333		847	2	244	1163	103	17,347
North Dakota	Sept.			127	6		112	6	110		16	79	2		1		44		3	56	1	563
	9 Mos.	4		896	50	5	626	17	1159	7	202	692	24	2	32		301		19	303	10	4,349
Ohio	Sept.	28	3	1061	38	48	549	36	751	4	122	533	52		58		184		149	298	35	3,949
	9 Mos.	253	58	7383	349	303	5493	317	7598	25	1892	4635	516	1	624	1	1499	19	973	2173	346	34,458
Oklahoma	Sept.	1		463	8	6	150	3	275		22	213	9		8		62	1	9	86	6	1,322
	9 Mos.	3		3343	57	28	2030	44	3270	5	588	1967	66		144		595	3	147	699	39	13,028
Oregon	Sept.	8	1	285	15	4	152	18	147	2	22	106	19		19		60		14	75	14	961
	9 Mos.	37	1	2147	199	33	1501	106	1785	21	275	1099	81		115	9	597		132	688	118	9,244
Pennsylvania	Sept.	29	78	903	75	11	624	30	714	9	101	582	92	19	52	3	211	4	88	249	44	3,918
	9 Mos.	474	689	7556	553	116	6460	304	7773	44	2086	5560	780	77	708	71	1889	55	891	1664	296	38,046
Rhode Island	Sept.	6		76	5	9	32		50		8	42	1		2	1	9		4	13	2	260
	9 Mos.	77	6	619	32	71	357	10	535	2	148	295	36		24	7	117	3	43	85	23	2,490
South Carolina	Sept.			270	2		96	3	160	12	17	59	9		9		25		5	53	6	726
	9 Mos.	3		2307	40		1291	25	2244	14	340	676	81		167		342		102	520	71	8,223
South Dakota	Sept.	1		93	11		97	9	78	1	6	75	7		8		18		4	83	1	492
	9 Mos.	8		733	88		714	36	859	9	195	637	25		69		192		26	503	10	4,104
Tennessee	Sept.		1	660	18	1	228	24	333		85	247	30		22		60		27	18	11	1,765
	9 Mos.	12	17	5248	118	26	2612	176	4141	24	1239	2262	190		246	3	702	2	241	910	133	18,302
Texas	Sept.		3	1454	45	2	550	14	902	2	121	691	38		30		162		59	278	21	4,372
	9 Mos.	1	14	10370	270	106	6157	113	9982	6	1934	5139	294	1	462		1807	2	605	2356	162	39,781
Utah	Sept.			109	3	1	44	5	75		20	69	2		2		18		4	17	1	370
	9 Mos.			852	29	25	418	44	856	14	231	501	25	1	15	1	206		29	189	41	3,477
Vermont	Sept.		1	43	1		26	4	54		9	43	3		3		15	1	1	5	1	210
	9 Mos.	9	24	532	25	9	431	22	687	5	183	395	63	4	96	6	107	9	28	316	25	2,976
Virginia	Sept.	4	3	648	27	2	236	20	575		32	222	15		17		85		33	110	29	2,058
	9 Mos.	87	52	4271	149	72	2302	110	4693	9	719	1772	102		229	1	645		216	823	129	16,581
Washington	Sept.	2		282	17	13	157	5	260		23	158	32		12	1	68		8	61	13	1,112
	9 Mos.	23	1	2284	150	61	1554	21	2714	17	642	1320	119		161	12	679		66	523	140	10,487
West Virginia	Sept.	5	3	167	6	3	89	14	132		17	76	8		12		34	1	12	54	16	649
	9 Mos.	19	58	1531	67	28	1188	83	1637	49	380	783	53		117		318	10	88	634	62	7,105
Wisconsin	Sept.	4		383	19	17	151	7	276	6	27	270	9	2	16		62		26	105	13	1,393
	9 Mos.	43		3892	235	133	1911	85	3201	103	787	2229	86	30	274	29	592	2	285	675	95	14,687
Wyoming	Sept.			35	7		21	2	31		3	36	4				6		1	24	1	171
	9 Mos.	1		524	45	3	294	8	567	3	81	322	15		12		106	3	40	352	12	2,388
Totals	Sept.—1947	282	314	19848	925	445	9416	569	14521	104	2279	9608	977	24	825	29	3414	28	1053	4579	659	69,899
	Sept.—1946	318	284	21079	340	260	8115	454	15790	46	3755	8425	110		1154	44	3196		664	4986	5220	69,564
Totals	9 Mos.—1947	3373	3199	157382	7774	3506	96459	4367	153440	896	35443	84232	7913	188	9846	434	31046	399	9735	35666	14701	650,538
	9 Mos.—1946	3201	2701	106065	3370	2660	71327	3295	85068	407	14436	55128	4274		6876	388	17096		6654	29714	2786	417,109

* Data from R. L. Polk & Co.

LAUGH IT OFF

Salesgirl: "Here's some perfume called 'Perhaps' that sells for $35 an ounce."

Young man: "Thirty-five dollars an ounce! For $35 I don't want 'Perhaps'. I want 'Sure'."

C C J

Fortune Teller: "Do you want to know something about your future husband?"

Maintenance Supt.'s Wife: "No, I want to know something about the past of my present husband for future use."

C C J

Magistrate: "You cannot drive now for two years, for you are a menace to pedestrians."

City Delivery Driver: "But, your honor, my living depends on it."

Magistrate: "So does theirs."

C C J

A prominent midget had died, and the sorrowing friends were calling at the house. One visitor in the afternoon came downstairs after seeing the body, and was asked by the widow if he had shut the door to the room where the body lay. The visitor said no, he didn't believe he had.

"Then I better go up and shut it," said the widow. "The cat's had him downstairs three times already today."

C C J

ROMA:" DOES YOUR BOY FRIEND START THINGS HE CAN'T FINISH?"

NOMA: "HE'S DOPIER THAN THAT. HE STARTS THINGS HE CAN'T EVEN BEGIN."

C C J

The wife had been put on the budget plan. At the end of each month she and her husband would go over the accounts together. Every once in a while he would find an item, "L. O. K. $3," and a little further on, "L. O. K., $6."

Finally he said, "My dear, what is this —'L. O. K.'?

"Lord Only Knows," she replied.

C C J

The rural maid was milking a cow in a corner of the meadow, when a ferocious bull started tearing across the field toward her. The girl did not stir but calmly continued her milking. Observers, who had run to safety, saw to their amazement that the bull stopped dead within a few yards of the girl, turned around and walked sadly away. "Weren't you afraid?" asked everyone.

"Certainly not," said the girl. "I happened to know this cow is his mother-in-law."

A married bus operator who made a lot of dough hauling war workers during the emergency, finally succumbed to temptation and spent a boisterous evening with the boys and gals in a little party. When he finally got up to go home he was dismayed to see the sun shining brightly.

What would he tell his wife?

At last he hit on an idea. He stepped to the phone, dialed his home number and shouted hoarsely: "It's all right, darling, they let me go. Don't pay the ransom."

C C J

MANDY: "BOY, DAT SHO' AM SOME RING. WHUT SIZE IS DE DIAMOND?"

RASTUS: "DIS AM DE FO'TEEN YEAR INSTALLMENT SIZE."

C C J

The lunch counter-man who had been serving for several years in a diner catering to truck drivers, became ambitious to better his station in life and obtained employment in a fashionable jewelry store. His first customer was a woman who asked to see a lady's wrist watch. The erstwhile counter-man bellowed lustily to the stock room boy: "One Waterbury on a handcuff, female!"

A second customer wanted some matched pearl necklaces.

"I've got just what you want," declared the salesman. "Fifty oyster growths on a rope! Line 'em up! Who's next?"

"I want a ring," stated the third customer. "Engagement ring, platinum with a diamond about two carats."

"Coming up, announced the salesman. "One tin shackle with a glass eye—two vegetables!"

"Well, all right, if you insist," the young man agreed somewhat reluctantly when his girl's mother suggested firmly that he remain overnight because it was storming so hard.

"I'll just run up and make sure the bed in the guest room is made," she said.

When she returned to the living room the young man was gone. A few minutes later he poured himself through the front door, looking like the proverbial drowned rat. "Goodness," she cried, "where have you been?"

"Hadda go home and get my pajamas," he gurgled.

C C J

A young truck mechanic from the North sought to locate in the South. He wrote to a friend in Alabama, asking him what the prospects seemed to be in his city for "A capable young mechanic and Republican."

In reply, the friend wrote: "If you are a good truck mechanic you'll find little competition here. If you are a Republican, the game laws will protect you."

C C J

Propped against a tree on the banks of a stream were two colored lads holding fishing rods. Finally, one nudged the other who was slumbering peacefully, "Say, Sam," he yawned, "yo' has a fish bitin' at de end ob yo' line."

The other boy opened one eye lazily. "Doggone," he sighed unhappily, "ah knew we picked out de wrong stream."

C C J

An out-of-town guest dropped in on the newlyweds.

"We haven't much room," apologized the host, "but you can sleep on my twin bed."

"Is it comfortable?"

"Derned if I know."

C C J

A couple came to St. Louis from the Ozark Mountains to be married, and brought along the best man. They were informed by the marriage license clerk that blood tests are necessary under Missouri law. They were sent to a doctor, who proceeded to take samples of blood from the prospective bride and groom.

The best man asked: "Ain't you gonna test my blood, too?"

"You're not getting married are you?" replied the doctor.

"No," said the best man, "but I'm gonna board with 'em."

Resume Work

CCJ QUIZ

by ROBERT F. BAHL

Readers from Detroit should be compelled to answer this quiz with one hand tied behind them. Otherwise, they might have an unfair advantage—as every question is about the city of Detroit, automotive capital of the world. Turn to page 92 for the correct answers.

1.

One of these motor cars bears the name of the founder of Detroit!

a. Cadillac.
b. Chevrolet.
c. De Soto.
d. La Salle.

2.

Who said it? Early in the war when Army brass ruled that all war industries should be built in the interior of the country, who said—"You can't win a war without Detroit."

a. Charles E. Sorenson.
b. William S. Knudsen.
c. Henry Ford.
d. Charles E. Wilson.

3.

And who was it, as victorious American troops reached Munich, that said—"Never in the history of the world has any one group of men contributed so much to victory as that group of Detroit industrialists"?

a. Gen. Dwight Eisenhower.
b. Gen. Omar Bradley.
c. Gen. George S. Patton.
d. Gen. Jacob L. Devers.

"I'm the Caboose."

4.

There's always a first—and the first gasoline-driven auto to be built in Detroit was that of . . .

a. Henry Ford.
b. Ransom E. Olds.
c. Charles B. King.
d. Charles E. Duryea.

5.

What has the motor vehicle industry done for Detroit? Between 1900 and 1940, the nation as a whole increased its population by 73 per cent, but for Detroit the increase was . . .

a. 150 per cent.
b. 242 per cent.
c. 468 per cent.
d. 689 per cent.

6.

Favorite hang-out of top automobile men in Detroit is . . .

a. The Detroit Athletic Club.
b. The Grosse Point Yacht Club.
c. The Yondotega Club.
d. The Grotto.

7.

In 1880, only the most foresighted in Detroit were dreaming of trucks and autos, so the city's leading industry was . . .

a. Shoes.
b. Bicycles.
c. Wagons and carriages.
d. Tobacco and cigars.

8.

New York's Grand Central Palace can say good-bye to the national auto show when Detroit completes its new Civic Center including exhibition halls covering . . .

a. 10,000 sq. ft.
b. 100,000 sq. ft.
c. The size of a football field.
d. Four acres.

9.

Can you pick out the trucks that have their headquarters in Detroit and its immediate suburbs?

a. Autocar.
b. Chevrolet.
c. Dart.
d. Diamond T.
e. Dodge
f. Federal.
g. Ford.
h. F. W. D.
i. G. M. C.
j. International.
k. Mack.
l. Oshkosh
m. Reo
n. Sterling.
o. Studebaker.
p. Walter.
q. Ward LaFrance.
r. White.
s. Willys.

10.

There are five parts to this last question. Mark each statement "true" or "false" as the case may be.

a. Detroit was once the capital of Michigan. True or false.
b. Detroit has been called the "Constantinople of the Western World." True or false.
c. Detroit's terrain, being almost as flat as a table top, proved advantageous in the early development of the motor vehicle. True or false.
d. The first gasoline auto in America was built in Detroit. True or false.
e. Before the advent of the auto, Detroit led the nation in the manufacture of freight cars. True or false.

Jobservations

The best way to break a bad habit is to drop it.

★ ★ ★

Nothing cooks your goose quicker than a boiling temper.

★ ★ ★

The fellow who hides his light under a bushel will never set the world on fire.

★ ★ ★

Seize opportunity as it comes and then you won't have to chase it as it goes.

"I'm musically inclined."

CORRECT Application of Motor Trucks

Eight vital steps in the selection of the right vehicle for specific service requirements and economical operation

Step 6

How to Determine the Correct Rear Axle Ratio

Three Factors in Determining Rear Axle Ratio . . Effect of Axle Ratio on the Economy, Performance and Life of an Engine . . Engine Characteristics . . The Relation of Fuel Economy to Speed . . Determining the Ideal Engine RPM . . Calculating the Required Axle Gear Ratio . . Choice of Axle Type

THIS STEP IN CORRECT APPLICATION is concentrated on the combination of gears at the center of the rear-axle housing. Most truck manufacturers offer a choice of rear-axle gears in several variations to suit different operating conditions. These variations are designed by axle ratio. For example, in the manufacturer's specifications the rear axle would be listed like this: Model: ABC; Type: Single reduction full floating; Gear Ratios: 5.14, 5.83, 6.28, 7.2. The truck buyer has his choice of any one of the four ratios listed.

What is the difference between these ratios? The ratios indicate the relationship of the number of teeth on the drive gear (which is the pinion at the end of the propeller shaft) to the number of teeth on the driven gear (which is the ring gear that turns the axle shafts). For example, the gear ratio of 6.28 tells that there are 7 teeth in the drive gear, and 44 teeth in the driven gear. Seven divided into 44 equals 6.28, which is the axle ratio. This ratio also indicates the relative speed of the two gears. Every time the drive gear or pinion makes 6.28 revolutions, the rear-axle ring gear will make one revolution.

The application of gearing in a truck should be based on the condition of the truck driving at full load at its normal full road speed on level ground. The gearing should be chosen to give the most efficient use of engine power under this condition. The most efficient point is reached when the truck is operating with the transmission in direct gear—as though the propeller shaft went straight through from engine to axle. Then the rear-axle ratio is the main influence on engine power before it reaches the wheels. For this reason, the choice of the right axle ratio at this point in the chain of driving parts from the engine to the wheels is very important.

When the truck is driven under full load at normal road speed on level ground with the transmission shifted into direct gear, the tire radius and the rear-axle gear ratio determine the speed of the engine in revolutions per minute. Throughout the life of the truck, the engine will do more of its work at this speed than at any other speed. Performance, economy, and life of the engine vary definitely with the different engine speeds—as will be discussed later.

Since the axle ratio has an effect on engine speed, as well as on economy, then correct application should aim at the selection of a ratio which permits the engine to operate at the ideal or best rpm under the conditions of normal full road speed with the transmission in direct drive. Selecting the rear-axle ratio to give this kind of ideal engine rpm is covered in this step.

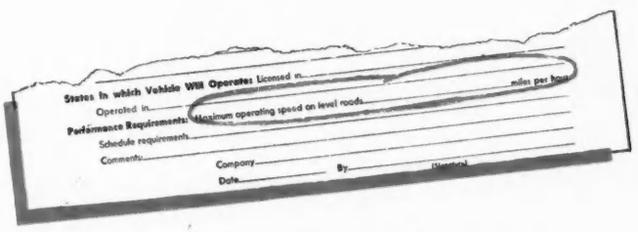

States in which Vehicle Will Operate: Licensed in
Operated in
miles per hour
Performance Requirements: Maximum operating speed on level roads
Schedule requirements
Comments:
Company
Date
By
(Signature)

Fig. 1. Data on Truck Requirement Analysis form (Step 1) will supply normal full road speed—speed that the truck will maintain normally for the greater part of its traveling time—second of three factors determining axle ratio

Factors in Determining Axle Ratio

SELECTING the correct rear-axle ratio will depend on three factors:

1. The tire size
2. The miles per hour at normal full road speed
3. The ideal engine operating speed for the truck application.

The first two factors have already been established in the previous steps. Factor 1, the tire size, was covered in Step 4. Factor 2, the miles per hour at normal full road speed, was discussed in Step 1, under the heading *maximum operating speed on level roads*, listed in the *Truck Requirement Analysis* form.

Quoting from that discussion of road speed: *"Maximum operating speed . . .* is the speed the operator wants his drivers to be able to maintain regularly on level roads with full load. This speed on the level must be maintained by the power of the engine against road resistance and normally light head winds."

Naturally the truck should be able to maintain this speed with safe margin of power in the engine to take care of slight grades and slight variations in head winds. So much for Factor 2.

Factor 3, the ideal engine operating speed for the truck application is the only factor to be solved before the gear ratio can be selected. In order to solve the factor and find the ideal engine operating rpm, the characteristics of the engine and the load requirements should be considered.

Engine Characteristics (Factor 3)

AMONG the engine characteristics which should be considered in trying to calculate the ideal engine rpm, is the relation of fuel economy to engine speed. There is a variation of fuel consumption, or engine economy, with the variation of engine speed, for any one power output requirement. This is an engine characteristic which is not exactly the same for all engines, but it is generally true of most high-output gasoline engines. Specifically, the best economy for any given load will be found above the range of maximum torque speed and below the maximum horsepower speed.

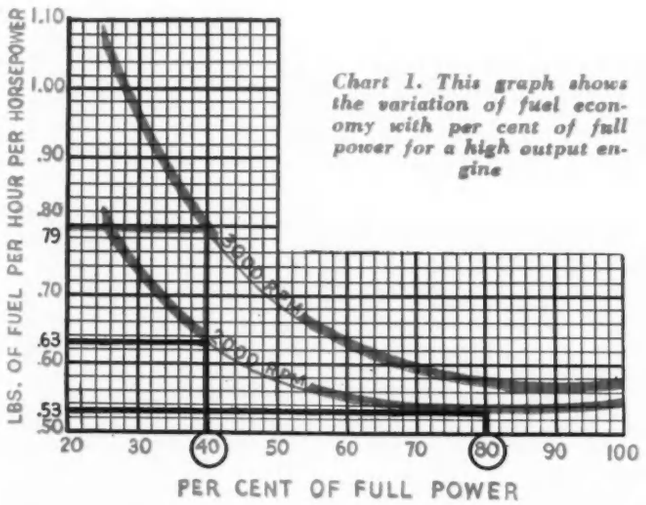


Chart 1. This graph shows the variation of fuel economy with per cent of full power for a high output engine

At 2000 rpm, and 40 per cent of full power, fuel used is .63 lb/hr, while at 80 per cent of full power, fuel used is only .53 lb/hr. As more power is used, gasoline consumption decreases until it reaches a point, after 90 per cent of full power, where consumption rises again slightly. For 3000 rpm, at 40 per cent of full power, fuel used is .79 lb/hr, showing higher speeds increase gas consumption

Chart 1 shows two economy curves for a typical high-output gasoline engine which has a maximum torque speed of about 1100 rpm to 1500 rpm and a maximum horsepower speed of about 3000 rpm.

There are several interesting facts to be observed from the chart. The 3000 rpm curve is above the 2000 rpm curve. At any power output—30 per cent, or 90 per cent, or any other—the fuel consumption is greater at the 3000 rpm (near top speed) than at the 2000 rpm. The lower curve of 2000 rpm, in fact, is near the minimum gasoline consumption point.

These same curves also show the way fuel consumption varies as the power output demanded of the engine at any one speed varies. For example, the highest consumption of fuel on both curves occurs at the very light loads—at loads less than 50 per cent of the full maximum power. The minimum fuel consumption range is toward the 100 per cent, the full power end of the curve. For this reason it is desirable, in the interests of fuel economy, to have the engine operating at nearly the full output of power, when the truck is traveling at the maximum operating speed on level roads.

This is one of the most important facts to bear in mind when determining the best engine rpm—that the engine has the highest fuel economy when it is working at nearly its full load capacity.

There are other factors besides fuel economy which limit the decision on the ideal engine rpm. For example, an item called *reserve of power*. There should be a suitable reserve of power at the road speed which results from the engine working at nearly full load. This reserve power, above the power required for normal road speed, is automatically a part of the full maximum engine power when the engine is selected by the method in Step 2. This can be seen quite readily by examining Table 2 in Step 2. *Service Rating Factors for Intercity-Type Service*, reproduced on Page 9.

Gross weights, the maximum normal running speed (with average head winds)—both factors which require a reserve of power—are taken into consideration in the design of the service rating factors in that table. So the engine selected will automatically have this reserve of power available at normal maximum running speed.

This brings up another engine characteristic. On the typical engine power curve, the maximum power of the engine varies at different speeds. Now when the horsepower of the engine has been determined by the method in Step 2, by using the service rating factors, this reserve of engine power required for efficient operation will be available at 95 per cent of the governed engine speed.

Summarizing the discussion of the ideal engine rpm, these facts have been high-lighted. There is a variation of fuel economy with engine speed. And best fuel economy occurs at nearly full engine load, near the peak of governed speed. A part of the full maximum engine power is required, above the road requirement, as reserve power. This reserve is available at 95 per cent of governed engine speed, when the engine has been selected by the method outlined earlier in Step 2.

Determining the Ideal Engine RPM.

DETERMINING the correct engine rpm can be divided into two rules, depending on the engine available for the truck model being considered. One rule is to be followed if the engine available for the truck model selected in Step 3 has a maximum power approximately the same as the engine power requirement calculated in Step 2.

The second rule is to be followed if the engine available for the model selected in Step 3 has more power than the calculations in Step 2 indicate are required.

RULE ONE—When the engine available in the truck model selected has a maximum power approximately the same as the power required for the job. The engine rpm at the normal loaded speed on level ground should be approximately 95 per cent of the governed engine speed. This makes it possible to operate engine at more economical speed and power condiions and the rear-axle ratio should be selected to get this result. Take, as an example, an application where the engine power required for a given set of operating conditions is 140 hp, and the engine having 142 hp at a governed speed of 2800 rpm is actually available in the truck model chosen. Then, the ideal operating speed for the engine in this application would be 95 per cent of 2800 rpm, or 2660 rpm.

Calculating Required Axle Gear Ratio

THREE factors were listed earlier in this step as being important in calculating the gear ratio: (1) The tire size, (2) the

miles per hour at normal full road speed, and (3) the ideal engine operating speed for the truck application.

The first and second factors are part of the calculations from previous steps. And now the third factor has been determined. All three are part of this formula for gear ratio:

$$\text{GEAR RATIO} = \frac{\text{engine rpm} \times \text{average loaded tire radius in inches}}{\text{mph} \times 168}$$

(168 is a constant)

The gear ratio may be found now by placing the known figures into the formula as follows:

$$\text{GEAR RATIO} = \frac{2660 \times 20.1 \text{ (l.r. } 11.00 - 20)}{50 \text{ mph} \times 168} = 6.36$$

Another method of finding the gear ratio after the three factors are known is by using the special slide rule, the *Truck Performance Rule*. The figures for *miles per hour*, *average loaded tire radius*, and *rpm of engine* are used on the slide rule to find the *total gear ratio*.

On the *Truck Performance Rule* the gear ratio can be found after the ideal engine operating speed has been calculated—as shown in Example 1. Move the slide till the 20.1 on the *average loaded tire radius* scale is directly under the 50 on the *miles per hour* scale. Then above the 2660 on the *rpm of engine* scale is a spot estimated to be 6.36 on the *total gear ratio* scale—which is the gear ratio the tractor requires.

RULE TWO—When the engine available in the truck model selected has a maximum power appreciably greater than that required, or when a larger engine is chosen by the operator to satisfy special needs. For example, in the case mentioned above, where 140 hp is required to meet the grade performance requirement, a model might be chosen having an engine with 160 hp at 2800 rpm governed speed. The engine rpm in such cases should be further reduced in proportion to the ratio of the required horsepower and the actual horsepower. Continuing with the example above, it would work out this way: The governed speed of 2800 rpm should be multiplied by 95 per cent giving 2660 rpm. This should be further reduced by the raio of required horsepower (which is 140) to the actual horsepower (which is 160). Multiplying 2660 by 140/160 gives 2325 rpm, the ideal operating speed for normal loaded road speed.

The calculations in these examples give a total gear for maximum operating speed in direct drive. But, of course, a truck does not always run at this speed. The speed must vary as grades or hills or different road conditions are met. Since the engine speed when pulling a load cannot vary as much as it is necessary to vary the truck speed, each truck must have more than one gear ratio. A series of ratios are needed so the driver can select the correct one according to the road conditions and grades encountered. This series of ratios is provided in a change-speed

EXAMPLE 1

HOW CORRECT GEAR RATIO CAN BE CALCULATED BY FORMULA

When Actual Engine Power Exceeds Requirement Power (Rule 2)

THE CONDITIONS:

Type of unit..... tractor-trailer
G.V.W..... 50,000 lb.
Tire size..... 11.00—20 (average loaded tire radius: 20.1)

The unit has a run of 260 miles to make in eight hours total time. An average speed of 33 mph is required, and a maximum normal running speed of 50 mph is specified to make this schedule over partly hilly and rolling country.

For a loaded gross weight of 50,000 lb, satisfactory performance requires an engine of 140 hp. The engine available in the model selected delivers 160 hp at 2800 revolutions per minute.

THE CALCULATIONS:

Already two of the three factors in the formula for axle ratio are known: Tire size, and maximum normal running speed. The third factor, ideal engine speed for the maximum normal loaded road speed of 50 mph, must be found.

Multiply the engine rpm by 95%:

$$2{,}800 \times 95 = 2{,}660$$

Multiply 2,660 by the ratio of required horsepower to actual horsepower:

$$2{,}660 \times \frac{140}{160} = 2{,}325 \text{ rpm}$$

IDEAL ENGINE OPERATING SPEED = 2,325 rpm

THE RESULT:

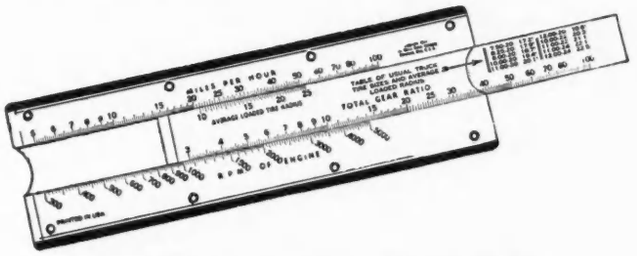
Now the formula can be used to find the axle ratio which will obtain this engine speed for the above conditions:

$$\text{Axle ratio} = \frac{\text{engine rpm} \times \text{average loaded tire radius in inches}}{\text{mph} \times 168}$$

$$\text{Axle ratio} = \frac{2{,}325 \times 20.1}{50 \times 168}$$

AXLE RATIO = 5.56

An available gear ratio approximately equal to 5.56 should be chosen for this tractor.



OTHER USES OF THE TRUCK PERFORMANCE RULE

PROBLEM: To determine the road speed at a specified rpm.

Truck has a 8.00 gear ratio, and is equipped with 10.00—20 tires. Specified rpm is 2800

1. Find the average loaded tire radius of the 10.00—20 tires on the table at right of the slider (19.4).
2. Set the slider so the 8 on "total gear ratio" scale is opposite the 2800 rpm.
3. Read the miles per hour opposite the 19.4 on the "average loaded tire radius" scale. Speed is approximately 41.0 mph.

PROBLEM: To determine the road speed in a specified gear.

Truck is governed at 2800 rpm's and equipped with 10.00—20 tires. Gear specified is 4th, total reduction is 11.8.

1. Set the slider so the 11.8 on the "total gear ratio" scale coincides with the 2800 on the "rpm" scale.
2. Find the average loaded tire radius of the 10.00—20 tires in the table at the right of the slider (19.4).
3. Read the figure opposite the 19.4 on the "average loaded tire radius" scale. Speed is approximately 27.5 mph.

PROBLEM: To determine the rpm of the engine at a specified road speed of 25 mph.

Truck has an 8.00 gear ratio, direct-in-4th gear, overdrive in 5th gear. Total reduction in overdrive is 8.2. Truck has 10.00—20 tires.

1. Find the average loaded tire radius of the tires in the table at the right of the slider (19.4).
2. Set the slider so the 19.4 on the "average loaded tire radius" scale coincides with the 45 on the "miles per hour" scale.
3. Read the rpm of the engine opposite the 6.2 on the "total gear ratio" scale. Engine speed is approximately 2400 rpm.

gear box, better known as the transmission. In Step 7, the types of transmissions and their uses will be discussed.

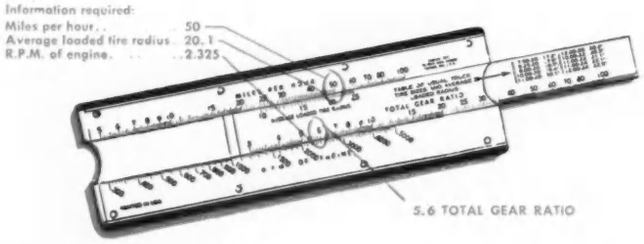


Fig. 2. An example of how correct axle gear ratio can be calculated by the use of a truck performance slide rule

Fig. 3. Encircled areas on Truck Requirement Analysis form show information used in selecting correct engine

Completing the Choice of Axle Type

SELECTING the type of rear axle was begun in the previous step, but was held up temporarily until the axle ratio was chosen. Now that the axle ratio is known, the job of selecting the type—single-reduction or double-reduction axle—can be completed. (Two-speed axles come into a different category. See problems on Page 25 and Step 7.)

The manufacturer's specifications should be referred to in the truck model which has been selected for the job to see the ratios available in each type of axle. If the correct axle ratio is available in the single-reduction, this type of axle should be selected. Reference can be made back to Step 5, Page 22, for the details on selection of the right type of rear axle. If the correct ratio is higher numerically than is available in a single-reduction axle, then a double-reduction axle should be selected.

Gear Ratios and Two-Speed Axles

TWO-SPEED axles have two gear ratios. In specifying an axle of this type, find one of the ratios in the same manner as the over-all gear ratio is selected for a single-speed axle. The other ratio of the two-speed axle should be considered as an auxiliary gear, providing either an underdrive or an overdrive, as desired. The use of the auxiliary types of gearing will be described in the next step.

Summary Method for Determining Correct Rear-Axle Ratio

THE axle ratio in a truck is therefore the purpose of changing the engine speed to a speed desired at the rear wheels. Just what wheel rpm is desired depends on the road speed needed and the grade requirements of the operation. Standard practice for arriving at an axle ratio has been to build an axle-ratio choice around general terms, such as *high road speed*, or *intercity operation*, or *hilly territory*, etc. From these terms have come general results—*high speed ratios*, or *low speed ratios*, etc.

Here, in this step, is outlined a method which puts the choice of the rear-axle ratio on a scientific basis. Replacing the vague terms are simplified calculations which give the result as an exact gear ratio, cut to the pattern of the trucking operation. Also, this method brings up the subject of economy. Not only does the axle ratio satisfy the conditions of speed and grades required, but the ratio also uses the most economical engine speed. Step by step, the method is this:

1. Since the axle ratio is selected on the basis of the transmission being in direct gear, the over-all ratio equals the axle gear ratio. Problem is to determine the axle ratio which will give the ideal or best engine operating rpm under the condition of normal full road speed when the truck is in direct gear.
2. In cases where the engine available for the truck model selected has a maximum power approximately the same as the engine power required, then calculating the gear ratio follows this rule. Ideal engine operating rpm at the normal loaded road speed on level ground, should be approximately 95 per cent of the governed engine speed. This figure for engine rpm, the figures on average loaded tire radius in inches, and the normal loaded road speed in miles per hour, can be applied to the formula (or to the *Truck Performance Rule*) so the final answer is the axle ratio required for the job.
3. In cases where the engine available in the truck model selected has a maximum power appreciably greater than that needed for the grade performance requirement (or when a larger engine is chosen by the operator to meet special needs), then use this procedure to find the most economical engine speed. Apply this rule: First reduce the engine rpm to 95 per cent of the governed engine speed: then further reduce this engine rpm in proportion to the ratio of the required horsepower to the actual horsepower. With this economical engine rpm figure, the figures on averaged loaded tire radius in inches, and the normal loaded road speed in miles per hour, use the formula (or the *Truck Performance Rule*) to find the exact rear-axle ratio.
4. From the manufacturer's specifications for the truck model, select the type of axle (single- or double-reduction) which is available for the gear ratio the job requires.

(Copyright 1947, The White Motor Co., Cleveland, Ohio)

Next Month: Step 7

"Selecting the Correct Transmission"

Of the eight steps in the "Correct Application of Motor Trucks," the following have been covered to date:

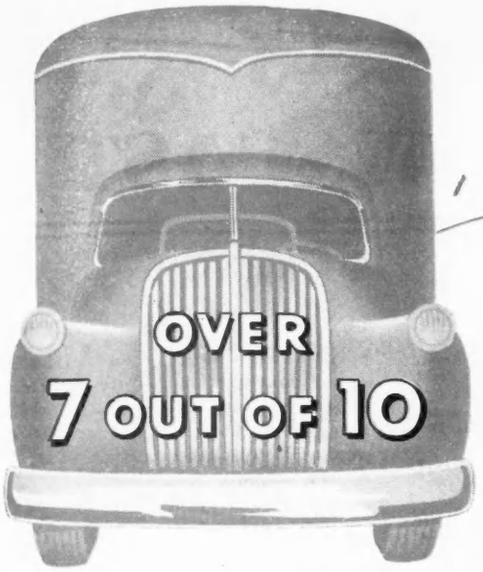
Step 1—Analyzing the Operating Requirements.

Step 2—How to Calculate Engine Horsepower.

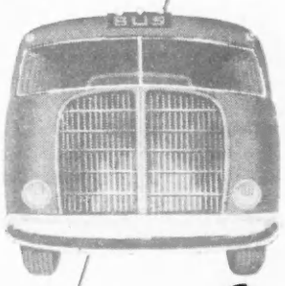
Step 3—Determining Wheelbase and Chassis Models.

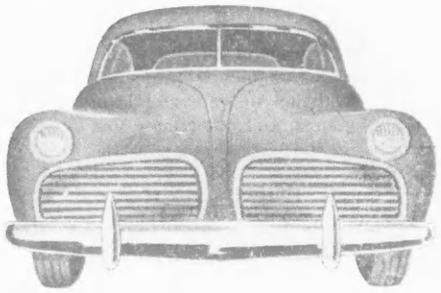
Step 4—Selection of Correct Size and Type of Tires.

Step 5—Determining Correct Type and Capacity of Rear Axle.

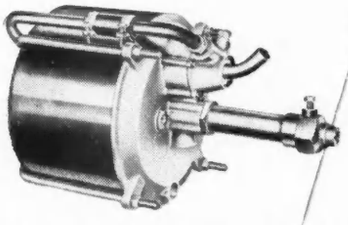


Automotive Vehicles Ever Built have been Better Because of





Bendix Engineering



Hydrovac* scores one more engineering "first" for Bendix. Hydrovac combines in one compact unit all the advantages of previous vacuum power braking systems. With three simple tubular connections, it uses engine manifold vacuum to give smooth, positive brake action with a minimum of driver effort. Already the industry acclaims Hydrovac as "1st in power braking."

The dictionary defines engineering as "the science and art of constructing and using machinery." In no other industry has progressive engineering achieved such outstanding results as in the automotive industry. Bendix* has been the partner of this progress for over thirty years, and has always held a prominent place in the vanguard of new engineering development. Tomorrow, as in the past, the industry can confidently expect the *best* from Bendix—First in Creative Engineering.

*REG. U. S. PAT. OFF.

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HYDROVAC* POWER BRAKING
B.K.* VACUUM POWER RELAY VALVES
TRAILER VACUUM POWER BRAKES
HYDRAULIC POWER STEERING

Bendix PRODUCTS DIVISION

WHEEL BRAKES
CENTERMOUNT PARKING BRAKE
HYDRAULIC REMOTE CONTROLS
UNIVERSAL JOINTS

CCJ NEWSCAST

TELEVISION SAFETY FILM PREVIEWED AT WHITE HOUSE

President Truman and a small group of guests previewed the first television film ever made on highway transportation and safety on Nov. 10 in the White House. The film, "In The Driver's Seat," was produced by the American Broadcasting Co., the Inter-Industry Highway Safety Committee and the Automotive Safety Foundation.

"In The Driver's Seat" dramatizes four major phases of safety activity included in the Action Program of the President's Highway Safety Conference—high school driver training, traffic law enforcement, the parking problem and adequate streets and highways.

Sixteen-millimeter sound prints of the film for regular motion picture projection will be made available to state and local Inter-Industry groups, and other interested organizations for showings throughout the United States.

BUSH HEADS AMA GROUP

E. J. Bush, president of Diamond T Motor Car Co., has been appointed chairman of the motor truck committee of the Automobile Manufacturers Association, succeeding Robert F. Black, president of White Motor Co., who has served continuously as chairman of the committee since 1938. Mr. Black will continue as a member of the truck committee.

OHIO STOPS DIVERSION

In the November elections Ohio adopted an anti-diversion amendment to the state's Constitution, thus becoming the twentieth state to forbid use of highway-user tax receipts for purposes other than highway spending.

INTERCHANGE PLAN

The Regular Common Carrier Conference of ATA has reported that considerable progress is being made on a plan for interchange of equipment among carriers. Shippers, the report indicated, have voiced a demand for more widespread interchange on an established pattern.

MATERIALS HANDLING

Topics of vital interest to motor truck operators will be discussed at the Conference on Materials Handling which will be a feature of the second National Materials Handling Exposition to be held at the Public Auditorium, Cleveland, O., Jan. 12-16, inc.

The major theme of the discussion is cost reduction through improved handling and discussion subjects will include all phases of the handling operations.

DATES & DOINGS

JAN. 12-14—Truck-Trailer Manufacturers Assn., Inc., Annual Meeting, at the Edgewater Gulf Hotel, Edgewood Park, Miss.

JAN. 12-16—Annual Meeting Society of Automotive Engineers, Book-Cadillac Hotel, Detroit, Mich.

JAN. 29—Ninth Annual Meeting of the National Council of Private Motor Truck Owners, Inc., Hotel Statler, Washington, D.C.

APRIL 13-16—18th Annual Safety Convention of the Greater New York Safety Council, in the Hotel Pennsylvania, New York City.

JULY 16-24 — Road Show, American Road Builders' Assn., Soldier Field, Chicago, Ill.

AAMVA FAVORS MILEAGE TAX

By approving the report of its own reciprocity committee, the American Association of Motor Vehicle Administrators has given a tentative green light to the principle of state milaege taxes. The committee singled out the new Oregon law, effective Jan. 1, as "an approach" to uniformity. The law provides a $5 registration fee plus graduated mileage tax against which fuel tax would apply.

NEW TRUCK REGISTRATIONS

New truck registrations during the first nine months of the year etsablished new industry records with 650,538 new trucks being registered, as compared with 417,109 for the same period last year, according to R. L. Polk & Co. The September total was 69,899 units and the figure for October may surpass 70,000 units. Observers believe the truck industry will come close to 850,000 total new registrations for this year. See page 66.

ROYDEN SHEELER DIES

Royden Sheeler, eastern sales representative for American Hammered Piston Ring Co., died on Nov. 7. He had been with the American Hammered since 1938.

As a special feature of International Harvester's "Harvest of Stars" broadcast from the Biltmore Hotel during the ATA convention, Harvester's W. C. Shumacher presented retiring ATA president Ted V. Rodgers with a special citation in recognition of his 14 years of service

LINCOLN WINS TAX DECISION

The Lincoln Electric Co., Cleveland, has won a three-year battle with the Treasury Department concerning the legality of entering its annuity benefits and so-called employee's trust fund as business expenses. Although finally upheld by the U. S. District Court of Appeals last June, the case was none-the-less referred to the Tax Court upon the insistence of the Commissioner. Last month came final word that the Tax Court had upheld the District Court's decision and that the case had been set down for computation under Rule 50.

ATA-AUTO-LITE WINNERS

Twenty-six winners of the annual contest sponsored jointly by the American Trucking Association, Inc., and The Electric Auto-Lite Co. have been announced by Frank A. Nealon, sales manager, Merchandising Division of Auto-Lite.

The winners received certificates of merit and a new glass rod and reel during the ATA convention. The contest, which is an annual event, was conducted from August 1, 1946, through July 31, 1947. Winners and runners-up are:

Division A (Local Operations): W. A. Mische, Consolidated Dairy Products Co., Inc., Long Island City, N. Y.; D. H. Puckett, City Transfer Co., Ltd., Honolulu; H. A. Warmath, Clover Farm Dairy Co., Memphis, and Robert I. Gayley, Supplee-Wills-Jones Milk Co., Philadelphia.

Division B (Long Distance Operations): Harry E. Grimes, Arkansas City, Kansas; John G. Fetterolf, Buckingham, Pa.; Fred R. Suddarth, Kaw Transportation Co., Sugar Creek, Miss.; James A. Pipkin, Barton-Robison Convoy Co., Inc., Oklahoma City; M. E. Bealey, Silver Eagle Co., Portland, Ore.; M. J. Hrebec, Missouri Pacific Freight Transportation Co., Houston, Tex., and Kenneth N. Beadle, Pacific Intermountain Express, Salt Lake City, Utah.

Division C (Combination Local and Long Distance Operation): Aime Bourgault, Woonsocket, R. I.; John R. Eldridge, Motor Truck Equipment Co., Harrisburg, Pa.; C. J. Hargleroad, Hargleroad Van and Storage Co., Hastings, Neb.; Bishop R. Wilcox, Maffet Transfer Line, Elizabethtown, Ky.; Chester C. Loving, Aetna Oil Co., Louisville, Ky.; S. E. Pratz, Jr., Heldt Brothers Trucks, Alice, Tex.; Scott Keeney, Blue Valley Transfer Co., Kansas City, Mo.; Kenneth R. Field, Coast Line Truck Service, Inc., Watsonville, Cal.; Harold H. Goff, Mistletoe Express Service, Oklahoma City; William A. Duffy, Davidson Transfer and Storage Co., Baltimore; Joseph Grumme, Silver Fleet Motor Express, Inc., Louisville, Ky., and E. J. Alger, George F. Alger Co., Detroit, Mich.

CORRECTION

A typographical error on page 73 of the November issue resulted in misspelling of the *Thornton* 4-rear wheel drive unit manufactured by the Detroit Automotive Products Corp.

(TURN TO PAGE 76, PLEASE)

This is HY-POWER

THE STANDARD *HY-POWER* UNIT
can be mounted anywhere
on chassis

The Self-Contained, Efficient Power Brake

That Assures Better Control for All Loads on All Roads

The super power and instant, smooth action of HY-POWER makes the brakes on any size truck safer and more efficient on any route they travel. HY-POWER combines in a single, completely enclosed unit all the advantages — proved by long service — of the Midland vacuum diaphragm chamber, hydraulic vacuum valve and hydraulic slave cylinder. This simplified unit has established a new standard of efficiency in truck power brakes. Write, wire or phone for complete information.

THE MIDLAND STEEL PRODUCTS CO. • 6660 MT. ELLIOTT AVE., DETROIT 11, MICH.

Export Dept: 38 Pearl St., New York, N. Y.

MIDLAND POWER BRAKES

NEWSCAST

(CONTINUED FROM PAGE 74)

INDUSTRIAL NOTES

Fruehauf Trailer Co. has been given direct representation for Babaco Alarms, including both installation and service.

Waukesha Motor Co. has increased its capital stock and authorized the issuance of 200,000 new shares of $5 common stock of the same class as the present 400,000 shares.

Construction projects that will increase the manufacturing facilities of six different divisions of Borg-Warner Corp. are under way or soon will start. Divisions affected include the Mechanics Universal Joint Div., Rockford, Ill. Detroit Gear Div., the Borg & Beck Div., Chicago, and the Morse Chain Co. Div., Ithaca, N. Y.

A road-test laboratory, to test petroleum chemicals in motor fuels, is being established by the du Pont Co., at El Monte, Cal.

Plans for improvements to its Ohio refinery facilities at Cincinnati and Toledo, to cost in excess of $20,000,000, have been announced by Gulf Oil Corp.

Kem Mfg. Co., Inc., has moved to larger and newer buildings at River Road in Fair Lawn, N. J. (just east of Paterson).

Kelite Products, Inc., has moved all manufacturing operations to the company's new Los Angeles plant situated on seven acres of land within a few blocks of the Los Angeles City Hall. Included are two buildings housing the company's subsidiary, Tivit Products Co.

The Trailmobile Co. has retained the services of The Harold F. Howard Co., management consultants of Detroit, in connection with contemplated improvements in appearance and payload capacity.

Thomas A. Edison, Inc., West Orange, N. J., has taken over the manufacturing and selling activities heretofore conducted by Edison-Splitdorf Corp., in which Thomas A. Edison, Inc., has been the majority stockholder.

CORRECTION

An interchange of captions, page 63, November issue, resulted in an illustration of OB Round Safety Tank with incorrect name and specifications. The tank shown is made by Prior Products Co., Inc., Middletown, Ohio. Text mentioned a model manufactured by American Safety Tank Co., which is not pictured in this issue.

MINNESOTA FLEET SAFETY GROUP

The Minnesota Fleet Supervisors' Safety Association was organized in Minneapolis recently for the primary purpose of discussing matters of fleet safety promotion. Some 25 fleets in all branches of the industry were represented at the first meeting.

R. J. Baumhofer of Gamble-Robinson Motor Fleet System was elected chairman; Arnold Foslien of Raymond Brothers Transportation Co., vice-chairman, and Charles LaCrosse of Twin City Bus Line, secretary-treasurer.

HOMETOWN NOTES

Charlotte, N. C.: A new Highway Trailer Co. sales and service factory branch.

Des Moines, Iowa: Air Reduction Sales Co. has opened a new retail store for sale of welding products at Tenth and Cherry Sts.

Erie, Pa.: A new Air Reduction Sales Co. retail store at 806 East 12th St.

Hamilton, Ohio: Marsh-Schneider Tire Co. at Monument Ave. and Market St. has been named distributor for White trucks.

Odessa, Tex.: A new Autocar factory branch at 2100 Kermit Highway (route 51).

Peoria, Ill.: Construction of a new Linde Air Products Co. plant at suburban Creve Coeur.

1947 Truck Trailer Production*

	September	9 Months
Vans:		
Insulated and refrigerated	103	1,574
Furniture	22	901
All other closed top	1,049	14,887
Open top	82	1,366
Total Vans	1,256	18,728
Platforms:		
With cattle and stake racks	272	2,657
With grain bodies	58	1,057
All other	346	6,464
Total Platform	676	10,178
Tanks:		
Petroleum	285	1,501
All other	33	771
Total Tanks	318	2,272
Pole and Logging:		
Single axle	265	3,597
Tandem axle	79	1,322
Total	344	4,919
Low-bed heavy haulers	255	1,979
Off-highway	59	695
Dump trailers	13	551
All other trailers	78	1,078
Total Trailers	2,999	40,400
Chassis for trailers	214	2,371
Total Trailers and Chassis	3,123	42,771

* Data from Industry Division Bureau of the Census.

1947 Domestic Motor Truck Factory Sales by Gross Vehicle Weight*

	5,000 & Less	5,001-10,000	10,001-14,000	14,001-16,000	16,001-19,500	19,501-26,000	Over 26,000	Total
January	25,578	11,103	17,361	15,746	3,259	2,313	2,074	77,434
February	26,051	13,076	19,170	18,150	2,316	2,579	1,934	83,276
March	27,268	16,852	19,358	20,232	3,062	3,254	2,056	92,082
April	24,487	15,978	18,953	14,885	3,582	3,360	2,270	83,515
May	23,532	14,091	17,474	13,028	2,577	2,950	2,044	75,698
June	21,924	10,809	16,303	16,462	2,928	2,837	2,350	73,613
July	22,679	12,868	16,452	19,294	2,305	3,089	1,777	78,444
August	20,217	9,746	13,977	15,592	2,216	2,968	1,666	66,382
September	31,901	16,326	18,012	15,448	2,803	3,359	1,875	89,724
October	36,538	16,368	15,396	16,781	3,312	3,909	2,003	94,307
10 Months	260,175	137,217	172,456	165,618	28,360	30,598	20,049	814,473

* Automobile Manufacturers Association.

INTRODUCING . . .

. . . HAROLD J. FIKEJS, as manager of the Mack Truck Co.'s Milwaukee Factory Branch. At 31 is one of the youngest men in the company's history to hold a branch managership.

. . . J. D. POTEET, as district manager for Toledo Steel Products Co. in the Eastern New York territory.

. . . R. J. NYMBERG as general sales manager of the Hercules Steel Products Corp., Galion, Ohio. He comes from a similar popsition with the truck division of Gar Wood Industries

. . . JOHN V. TRACY, as advertising and sales promotion manager of The Truckstell Co. During the last year he served as Trucksteel account executive for Ross Roy, Inc., of Detroit.

. . . FRANK STUDY, as branch manager of the Newark Branch of Highway Trailer Co.

. . . E. W. WINDSOR, left, appointed general sales manager of the automotive and graphic arts sales organizations, The Sherwin-Williams Co. . . . And NORMAN A. PAELKE, right, named sales manager of automotive sales for the company.

. . . W. E. DAY as director of research for Mack Trucks, Inc. He was formerly chief Metallurgist and General Foundry Superintendent.

. . . A. H. BURRIS, as Columbus branch manager of Trailmobile Co. C. L. Waggoner, former manager, has been transferred to Detroit, as branch manager there.

. . . ALAN G. ORSBORN, as assistant in charge of sales promotion for the Kerrick Kleaner, Clayton Vehicle Analyzer and Clayton Steam Generator divisions, Clayton Mfg. Co., El Monte, Cal.

. . . ROBERT BAUMGARDNER, promoted to advertising manager of the Pennsylvania Rubber Co. (Jeannette, Pa.), a division of The General Tire & Rubber Co.

(TURN TO PAGE 88, PLEASE)

Truck Specifications Table

OF CURRENT PRODUCTION MODELS

DATA SUPPLIED BY MANUFACTURERS AND TABULATED BY

COMMERCIAL CAR JOURNAL

Key to Definitions, References and Abbreviations

DEFINITIONS

MAKE AND MODEL

Only Domestic Truck Models are listed.

OPTIONAL UNITS

For the express purpose of best fitting the truck to the individual job most of the models listed can be provided with optional engines, transmissions, axles, etc., and these models when so equipped are considered standard stock models.

CHASSIS LIST PRICE

The chassis list price applies to the minimum standard wheelbase with standard tires and standard equipment. All prices are F.O.B. factory. Chassis list price does not include the price of the Cab unless otherwise noted.

RECOMMENDED GROSS VEHICLE WEIGHT FOR NORMAL SERVICE

The Gross Weights published herewith are those supplied by manufacturers as their Recommended Gross Vehicle Weights for Normal Operating Conditions, and are based upon the Maximum Authorized Tire Size listed. In actual practice the manufacturer may either increase or decrease the gross vehicle weight rating when either favorable or unfavorable operating conditions are involved. Since the proper performance of a motor truck depends upon many factors, including grades, road conditions, etc., the gross weights that a manufacturer is prepared to recommend will vary with particular conditions, and the manufacturer's own standard of safety factors. Specific recommendations, therefore, should be obtained from the manufacturer's representative.

CHASSIS WEIGHT

The chassis weight listed includes the weight of the minimum standard wheelbase chassis, with cowl, with standard tires, with standard equipment, with crankcase and cooling system full, and 5 gallons of fuel in the tank. It does not include the weight of the Cab. This applies to C.O.E. as well as conventional chassis types. Exceptions are noted.

STANDARD TIRE SIZE

The standard tire size listed is that which is included in the Chassis List Price.

MAXIMUM AUTHORIZED TIRE SIZE

The tire size listed in this column is the maximum size recommended by the manufacturer of the chassis for the Gross Vehicle Weight for Normal Operating Conditions. It is furnished at extra cost, if it differs from the standard size. Dual rears are understood; exceptions noted.

MINIMUM STANDARD WHEELBASE

The minimum standard wheelbase is the so-called standard wheelbase on which the Chassis List Price is based.

MAXIMUM STANDARD WHEELBASE

The maximum standard wheelbase is the extreme end of the standard range of wheelbases offered by the chassis maker.

MAXIMUM BRAKE HP.

Maximum Brake Horsepower at Given R.P.M. is actual dynamometer reading without accessories.

GEAR RATIO RANGE

Gear Ratio Range in High—Ratios within the range given are available at no extra cost. Exceptions are noted.

TRACTORS

Unless given the designation (N)—meaning not available as a tractor—all standard models may be assumed to be available as tractors. Exclusively Tractor models are designated (T).

KEY TO REFERENCES

c.f.—Cab Forward design.
c.o.e.—Cab-Over-Engine design.
(D)—Diesel-engine equipped.
(T)—Designed for tractor use only.
(C)—Converted Ford or Chevrolet Model.

(2) International Harvester—Specifications shown represent only the basic standard chassis units and standard chassis ratings in keeping with definitions established by Commercial Car Journal. Optional units not shown such as engines, clutches, transmissions, axles or axle ratios, brakes, wheels and tires, frames or frame reinforcements, optional wheelbases or any other units which make up part of the truck chassis and which International will furnish and approve from the factory as optional equipment can or will change either the ratings, chassis weight shown or performance of the truck as indicated by this list.

Also the company reserves the privileges of assigning special gross vehicle ratings for any chassis providing in the opinion of our engineering department, the type of service justifies the new rating without decreasing the safety factor designed into the truck.

(a)—Available with Two-Speed Axle designated KBS Models.

KEY TO ABBREVIATIONS

MAKES—ALL

B—Bendix
BL—Brown-Lipe.
Bu or Bud—Buda.
BW—Bendix-Westinghouse
C—Chevrolet.
Cl or Cla—Clark.
Con—Continental.
Cum—Cummins-Diesel.
Eat—Eaton.
F—Ford.
Fu—Fuller.
H—Hotchkiss.
Her—Hercules.
L—Lockheed.
LH—Lockheed front, Wagner "hi-Tork" rear.
LW—Lockheed front, Wisconsin rear.
M—Midland.
N.P.—New Process.
O or Ow—Own.
Op or Opt—Optional.
Shu—Shuler.
Spi—Spicer
T or Tim—Timken.
Tw—Timken-Westinghouse
TW—Timken-Wisconsin.
WG—Warner Gear.
Wau—Waukesha.
W or Wis—Wisconsin.
Ws—Westinghouse.
WW—Westinghouse or Wagner.

WHEELS DRIVEN

2F—Forward unit of Rear Axle Group.
2R—Rear Unit of Rear Axle Group
4R—Forward and rear units of Rear Axle Group.
6—All wheels.

BRAKES—SERVICE

Location

4—Four Wheels, front and rear.
4r—Four Wheels, rear only.

Type

I—Internal.
X—External.

Operation

A—Air.
H—Hydraulic.
V—Vacuum.
D or Dp—Dual Primary

BRAKES—HAND

Location

C—Center of double propeller shaft.
2—Rear wheels.
4—Four wheels.
6—Six wheels.
P—Back of Power Divider.
J—Jackshaft.
T—Transmission
F—Driveshaft.

Type

D—Tru-Stop disk.
I—Internal.
M—Mechanical.
X—External.
PD—Two drums on rear of power divider.

BRAKE DRUMS

Material

a—Cast alloy iron.
A—American Car Foundry.
c—Cast iron.
Cl—Copper iron.
Co—Composite.
D—Dayton.
E—Ermalite.
G—Gunite.
N—Nickel iron.
S—Steel.

(Where a combination of any of the above is used, the first reference mark applies to the front and the second to the rear drums.)

FRAME

Type

C—Channel.
T—Channel tapered front and rear.
L—Channel reinforced with liner.
B—Channel reinforced with both liner and fishplate.
P—Channel reinforced with plate.
TL—Channel tapered front and rear reinforced with liner.
D—Drop Center
Tf—Tapered front.
A—Straight section sidemembers, lined with oak inserts.
Z—Reinforced (X) member frame, box type sections.

REAR AXLE

Final Drive and Type

B—Bevel.
CD—Chain Drive
F—Full-floating.
H or Hy—Hypoid.
d—Dual range axle.
2—Double Reduction.
S—Spiral bevel.
W—Worm.
¾—Three Quarters Floating.
½—Semi-Floating
T—Torque Tube

GEAR RATIOS

(**) Only on ratio.

Drive and Torque

H—Hotchkiss (springs).
R—Radius Rods.
L—Parallel Torque Rods
T—Torque Arm.

GOVERNOR STANDARD

Y—Yes.
N—No.

(Continued from Page 79)

Line Number	MAKE AND MODEL	Chassis List Price	WHEELBASE Minimum Standard	WHEELBASE Maximum Standard	Gross Vehicle Weight for Normal Service	Chassis Weight (See definition)	TIRE SIZES D-dual rear S-single rear: Standard Front and Rear	TIRE SIZES: Maximum Authorized Tire Size (Duals unless noted)	ENGINE DETAILS: Make and Model	No. of Cylinders, Bore and Stroke	Displacement	Comp. Ratio	Torque lb. ft.	Max. Brake H.P. at R.P.M. Given	Main Bearings: Number, Diameter and Length	Governor Standard	TRANSMISSION: Make and Model	TRANSMISSION: Forward Sp'ds	REAR AXLE: Make and Model	REAR AXLE: Gear and Type	REAR AXLE: Drive & Torque	REAR AXLE: Gear Ratio Range in High	FRONT AXLE: Make and Model	BRAKES SERVICE: Make	BRAKES SERVICE: Location	BRAKES SERVICE: Type Operat'n	BRAKES SERVICE: Lining Area	BRAKES SERVICE: Drum Area	BRAKES SERVICE: Drum Material	BRAKES: Hand Location	BRAKES: Type	C-A Dimensions (Min. Std. W. B.)	FRAME: Side Rail Dimensions	FRAME: Type
	Available																																		
1	CS200-SP		126	133	15000		7.00/20D	7.50/20	Wau 6BM	6–3½x4¼	263	5.9	180	78–2800	7–2½x10¼	N	WG T9	4	Tim 53440H	SF	H	** –6.67	Tim 32502H	L4IH				a	TX	Opt	10x3x¼	T
2	C-250-SP		105		18000		8.25/20D	8.25/20	Wau 6BZ	6–4x4¼	320	5.9	210	95–2500	7–2½x10¼	N	Fu 5A330	5	Tim 53411H	SF	R	6.83–7.4	Tim 32502H	L4IH	334	583	a	TX	Opt	10x3x¼	T
3	CS-250-SP		105		20000		8.25/20D	9.00/20	Wau 6BZ	6–4x4¼	320	5.9	210	95–2500	7–2½x10¼	N	Fu 5A330	5	Tim 54411H	SF	R	6.83–7.4	Tim 32502H	L4IH	334	583	a	TX	Opt	10x3x¼	T
4	CS-400-LSP		105		21500		9.00/20D	10.00/20	Wau 6BZ	6–4x4¼	320	5.9	210	95–2500	7–2½x10¼	N	Fu 5A330	5	Tim 56410H	SF	R	6.83–7.4	Tim 35000H	L4IH	334	583	a	TX	Opt	12x3x¼	T
5	CS-500-SP		105		22000		9.00/20D	10.00/20	Wau 6MZA	6–4¼x4¾	404	5.9	286	112–2500	7–2½x12½	Y	Fu 5F430	5	Tim 56410H	SF	R	6.83–7.4	Tim 35000H	L4IH	334	583	a	TX	Opt	12x3x¼	T
6	CS-550-SP		105		24000		9.00/20D	10.00/20	Wau 6MZA	6–4¼x4¾	404	5.9	286	112–2500	7–2½x12½	Y	Fu 5F430	5	Tim 58300H	SF	R	6.83–7.4	Tim 35000H	L4IH	380	660	a	TX	Opt	12x3x¼	T
7	CS-550-SPX		112		32000		10.00/20D	11.00/20	Wau 6MZA	6–4¼x4¾	404	5.9	286	113–2500	7–2½x12½	Y	Fu 5F430	5	Tim 8200H	2F	R	** –7.84	Tim 26450H	L4IH	570	1051	a	TX	Opt	14x3x☆	T
8	CS-600		Opt	Opt	36000		11.00/20	11.00/24	Wau 6SRKR	6–4⅝x5½	517	5.9	365	125–2300	7–2½x12½	Y	Fu 5F430	5	Tim 8200PA	2F	R	** –7.84	Tim 27452TW	L4IH	722	1051	a	TX	Opt	14x3x☆	T
9	CS-600-SP		Opt	Opt	40000		11.00/20	11.00/24	Wau 145GK	6–5¼x6	779	5.6	590	186–2000	7–3½x17¾	Y	Spl 7841▽	8	Tim 8200PA	2F	R	6.42–7.84	Tim 27452TW	L4IH	722	1051	a	TD	Opt	14x3x☆	T
10	(D) CS-600-SP. Opt.		Opt	Opt	40000		11.00/20	11.00/24	Cum HB600	6–4½x6	672	17.	510	150–1800	7–4½x16½	Y	Spl 7841▽	8	T SW3012PA	WF	R	** –6.16	Tim 27452TW	L4IH			A	TD	Opt	14x3x☆	T
11	Biederman NSH		130	190	21000	6070	8.25/20D	10.00/20	Her JXLD	6–4x4¼	339	6.9	272	131–3200	7–2½x10‡‡	N	Fu 5A330	5	TimH700DPH	SF	H	** –7.2	Tim 35000HX	LH4IH	514	744	G	T	60	9x3x¼	C
12	NSD		130	190	21000	6070	8.25/20D	10.00/20	Her JXLD	6–4x4½	339	6.9	272	131–3200	7–2½x10‡‡	N	Fu 5A330	5	TimH700DPH	2D	H	6.13–8.15	Tim 35000HX	LH4IH	514	744	G	T	60	9x3x¼	C
13	Chevrolet EP	790	116		4600	▽2550	6.00/16S	158	O-Thrift Mas.	6–3½x3¾	216	6.5	174	90–3300	4– ♦ ♦	N	Own	3	Own	Hy‖	T	** –4.11	Own	O4IH	159	242	Co	2I	39	5¾x2¼x♣	C
14	ER	885	125		♦5800	2830	158	7.00/17S	O-Thrift Mas.	6–3½x3¾	216	6.5	174	90–3300	4– ♦ ♦	N	Own	3	Own	HyF	H	** –4.57	Own	O4IH	178	272	Co	2I	48¼	5¼x2¼x♣	C
15	ES	930	137		8800	3095	7.00/17S	7.00/18	O-Thrift Mas.	6–3½x3¾	216	6.5	174	90–3300	4– ♦ ♦	N	Own	4	Own	HyF	H	** –5.14	Own	O4IH	243	371	Co	2I	60	7x2¾x☆	C
16	QJ	1020	137		12500	3475	7.00/20S	7.50/20	O-Thrift Mas.●	6–3½x3¾	216	6.5	174	90–3300	4– ♦ ♦	N	Own	4	□Own	HyF	H	6.17	Own	O4IH	330	478	Co	2I	60	7x2¾x☆	C
17	QK	1050	161		12500	3585	7.00/20S	7.50/20	O-Thrift Mas.●	6–3½x3¾	216	6.5	174	90–3300	4– ♦ ♦	N	Own	4	□Own	HyF	H	6.17	Own	O4IH	330	478	Co	2I	84	8¼x2½x¼	C
18	(School bus) QL	1195	161		12000	4075	6.50/20D	7.00/20	O-Thrift Mas.●	6–3½x3¾	216	6.5	174	90–3300	4– ♦ ♦	Y	Own	4	□Own	HyF	H	6.17	Own	O4IH	330	478	Co	2I		8¼x2½x¼	C
19	QVS	1410	137		15000	4105	7.50/20D	8.25/20▲	O-Load Mas.	6–3⅞x3‡‡	235	6.6	192	93–3100	4– ♦ ♦	Y	Own	4	□Own	HyF	H	6.17	Own	O4IH	330	478	Co	2I	60	8¼x2½x¼	C
20	QWS	1430	161		15000	4185	7.50/20D	8.25/20▲	O-Load Mas.	6–3⅞x3‡‡	235	6.6	192	93–3100	4– ♦ ♦	Y	Own	4	□Own	HyF	H	6.17	Own	O4IH	330	478	Co	2I	84	8¼x2½x¼	C
21	(c.o.e.) QPS	●1715	110		15000	●4590	7.50/20D	8.25/20▲	O-Load Mas.	6–3⅞x3‡‡	235	6.6	189	90–3100	4– ♦ ♦	Y	Own	4	□Own	HyF	H	–6.17	Own	O4IH	330	478	Co	2I	60½	8¼x2½x¼	C
22	(c.o.e.) QRS	●1755	134		15000	●4810	7.50/20D	8.25/20▲	O-Load Mas.	6–3⅞x3‡‡	235	6.6	189	90–3100	4– ♦ ♦	Y	Own	4	□Own	HyF	H	–6.17	Own	O4IH	330	478	Co	2I	84½	8¼x2½x¼	C
23	(c.o.e.) QSS	●1775	158		15000	●4895	7.50/20D	8.25/20▲	O-Load Mas.	6–3⅞x3‡‡	235	6.6	189	90–3100	4– ♦ ♦	Y	Own	4	□Own	HyF	H	–6.17	Own	O4IH	330	478	Co	2I	108½	8¼x2½x¼	C
24	(c.o.e.) QP	●1715	110		16000	●4590	7.50/20D	8.25/20	O-Load Mas.	6–3⅞x3‡‡	235	6.6	189	90–3100	4– ♦ ♦	Y	Own	4	□Own	HyF	H	6.17	Own	O4IH	330	478	Co	2I	60½	8¼x2½x¼	C
25	(c.o.e.) QR	●1755	134		16000	●4810	7.50/20D	8.25/20	O-Load Mas.	6–3⅞x3‡‡	235	6.6	189	90–3100	4– ♦ ♦	Y	Own	4	□Own	HyF	H	6.17	Own	O4IH	330	478	Co	2I	84½	8¼x2½x¼	C
26	(c.o.e.) QS	●1775	158		16000	●4895	7.50/20D	8.25/20	O-Load Mas.	6–3⅞x3‡‡	235	6.6	189	90–3100	4– ♦ ♦	Y	Own	4	□Own	HyF	H	6.17	Own	O4IH	330	478	Co	2I	108½	8¼x2½x¼	C
27	QV	1410	137		16000	4105	7.50/20D	8.25/20	O-Load Mas.	6–3⅞x3‡‡	235	6.6	192	93–3100	4– ♦ ♦	Y	Own	4	□Own	HyF	H	6.17	Own	O4IH	330	478	Co	2I	60	8¼x2½x¼	C
28	QW	1430	161		16000	4185	7.50/20D	8.25/20	O-Load Mas.	6–3⅞x3‡‡	235	6.6	192	93–3100	4– ♦ ♦	Y	Own	4	□Own	HyF	H	6.17	Own	O4IH	330	478	Co	2I	84	8¼x2½x¼	C
29	(School bus) QX	1475	199		15000	4580	7.50/20D	8.25/20	O-Load Mas.	6–3⅞x3‡‡	235	6.6	192	93–3100	4– ♦ ♦	Y	Own	4	□Own	HyF	H	6.17	Own	O4IH	330	478	Co	2I		8‡‡x2‡‡x♣	C
30	Corbitt■ 18BG		181		18000		9.00/20	10.00/20	Con M6330	6–4x4¾	330	6.1	246	104–2800	7–2½x12	Y	Cla 205V	5	TimH100DPH		H	**–5.29	Tim 32502H	B4IHV			a	TX		8x3¼x¼	T
31	22BG		190		22000		10.00/20	10.00/22	Con B6371	6–4½x4⅝	371	6.0	280	100–2600	7–2½x13½	Y	Fu 5A43	5	Tim L100DPH		H	**–5.29	Tim 35000H	B4IHV			a	TX		8x3¼x¼	T
32	25BG		200		25000		10.00/22	11.00/22	Con B6427	6–4¼x4⅞	427	5.9	325	127–2600	7–2½x13½	Y	Fu 5A43	5	Tim Q100P		H	**–6.17	Tim 35100TW	W84IA			a	TX		8¼x3¼x☆	T
33	(T) 18TG		137		18000		9.00/20	10.00/20	Con M6330	6–4x4⅜	330	6.1	246	104–2800	7–2½x12	Y	Cla 205V	5	Tim H100P‡‡		H	**–5.29	Tim 32505TW	W84IA			a	TX		7½x3¼x☆	T
34	(T) H18TG		137		18000		10.00/20		Con M6330	6–4x4⅜	330	6.1	246	104–2800	7–2½x12	Y	Cla 205V	5	Tim L100P‡‡		H	**–5.29	Tim 32505TW	W84IA			a	TX		7½x3¼x☆	T
35	(T) 22TG		144		22000		10.00/20	10.00/22	Con B6427	6–4¼x4⅞	427	5.9	325	127–2600	7–2½x13½	Y	Fu 5A43	5	Tim L100P‡‡		H	**–5.29	Tim 35000TW	W84IA			a	TX		8x3¼x¼	T
36	(T) H22TG		144		22000		10.00/22		Con B6427	6–4¼x4⅞	427	5.9	325	127–2600	7–2½x13½	Y	Fu 5A43	5	Tim Q100P‡‡		H	**–5.29	Tim 35100TW	W84IA			a	TX		8x3¼x¼	T
37	(T) 25TG		148		25000		10.00/22	11.00/22	Con R6513	6–4½x5⅛	513	5.9	400	164–2600	7–3¼x—	Y	Spl 6253		Tim Q100P‡‡		H	**–6.17	Tim 35100TW	W84IA			a	2		8½x3¼x☆	T
38	(T) H25TG		148		25000		10.00/22		Con R6513	6–4½x5⅛	513	5.9	400	164–2600	7–3¼x—	Y	Spl 6253		Tim S100PT‡‡		H	**–6.17	Tim 35100TW	W84IA			a	2		8½x3¼x☆	T
39	(T) 28TG		147		28000		11.00/22	11.00/24	Con R6602	6–4½x5½	602	5.9	460	185–2600	7–3¼x—	Y	Fu 5A650		Tim S200P‡‡		H	**–6.42	Tim 26450TW	W84IA			a	2D		8½x3¼x☆	T
40	(D) (T) 22TD		144		22000		10.00/20	10.00/22	Her DWXD	6–4¼x4¾	404	15	320	135–2600		Y	Fu 5A430		Tim L300P		H	6.32–8.20	Tim 35000TW	W84IA			a	TX		8x3¼x¼	T
41	(D) (T) H22TD		144		22000		10.00/22		Her DWXD	6–4¼x4¾	404	15	320	135–2600		Y	Fu 5A430		Tim Q300P		H	6.53–8.53	Tim 35100TW	W84IA			a	TX		8x3¼x¼	T
42	(D) (T) 25TD		148		25000		11.00/20	11.00/22	Her DRXC	6–4⅝x5¼	529	14	400	148–2200	7–3½x13¾	Y	Spl 6253		Tim Q300P		H	6.53–8.53	Tim 35000TW	W84IA			a	2		8½x3¼x☆	T
43	(D) (T) H25TD		148		25000		10.00/22		Her DRXC	6–4⅝x5¼	529	14	400	148–2200	7–3½x13¾	Y	Spl 6253		Tim R300P		H	6.53–8.53	Tim 35000TW	W84IA			a	2		8½x3¼x☆	T
44	(D) (T) 27TD		152		27000		10.00/22	11.00/24	Cum HB600	6–4⅞x6	672	17	500	150–1800	7–4½x16½	Y	Fu 5A920		Tim Q100P‡‡		H	5.29	Tim 26450W	W84IA			a	2		8½x3¼x☆	T
45	(D) (T) H27TD		152		27000		10.00/22		Cum HB600	6–4⅞x6	672	17	500	150–1800	7–4½x16½	Y	Fu 5A920		Tim R300P		H	4.92–6.42	Tim 26450W	W84IA			a	2		8½x3¼x☆	T
46	(D) (T) 28TD		155		28000		10.00/22	11.00/24	Cum NHB600	6–5½x6	743	15	575	200–2100		Y	Fu 5A920		Tim S200P‡‡		H	6.42	Tim 26450W	W84IA			a	2D		8½x3¼x☆	T
47	Crosley B		80		1680		4.50/12		Own CE7	4–2½x2¼	44	7.5	33	26–5400	5–♦		WG-ASI-T92	3	Spl		2F		** –5.17	Own	Haw M			64	72	C			
48	Dodge WC		116		4600		6.00/16S	6.50/16S	Own T-112	6–3¼x4⅜	217	6.6	172	95–3600	4–2½x4.8	N	NP 36520	3	Own T112	HyS	H	3.73–4.78	Own T112	O4IH	174	264	Co	TX	40‡‡	6☆x2☆x☆	C
49	WD-15		120		5200		TA-15S	TA-15S	Own T-114	6–3¼x4⅜	217	6.6	172	95–3600	4–2½x4.8	N	NP 36520	3	Own T114	HyS	H	3.73–4.78	Own T114	O4IH	183	276	Co	TX	44‡‡	6☆x2☆x☆	C
50	WD-20		120	133	7000		6.50/16S△	6.00/20	Own T-116	6–3¾x4⅝	230	6.7	184	102–3600	4–2½x4.8	N	NP 37520	3	Own T116	HyF	H	3.90–4.89	Own T116	O4IH	197	294	Co	TX	44‡‡	6½x2½x☆	C
51	WF-21		135	160	9500		6.00/20S‡	6.50/20	Own T-118	6–3⅞x4¼	236	6.6	192	109–3600	4–2½x5.0	N	NP 38750	4	Own T118	HyF	H	5.11–6.83	Own T118	O4IH	284	407	C	TX	60	7x2¾x.21	C
52	WF-31		135	200	14000		6.00/20S‡	8.25/20‖	Own T-118	6–3⅞x4¼	236	6.6	192	109–3600	4–2½x5.0	N	NP 38750	4	Own T118	HyF	H	5.11–6.83	Own T118	O4IH	284	407	C	TX	60	7x2¾x.21	C
53	WFA-31		135	200	14000		6.00/20S‡	8.25/20‖	Own T-118	6–3⅞x4¼	236	6.6	192	109–3600	4–2½x5.0	N	NP 38750	4	Eat A5-1350	SFd	H	Dual Rge.	Own T118	O4IH	284	407	C	TX	60	7x2¾x.21	C
54	(c.o.e.) WFM-35		105	159	1~500		6.00/20S‡	8.25/20‖	Own T-128	6–3⅞x4¼	236	6.6	192	109–3600	4–2½x5.0	N	NP 38780	4	Own T128	HyF	H	5.11–6.83	Own T128	O4IH	284	407	C	TX	60	7x2¾x☆	C
55	(c.o.e.) WFMA-35		105	159	14500		6.00/20S‡	8.25/20‖	Own T-128	6–3⅞x4¼	236	6.6	192	109–3600	4–2½x5.0	N	NP 38780	4	Eat A5-1350	SFd	H	Dual Rge.	Own T128	O4IH	284	407	C	TX	60	7x2¾x☆	C
56	WFX-31		135	200	15000		7.50/20	8.25/20	Own T-118	6–3⅞x4¼	236	6.6	192	109–3600	4–2½x5.0	N	NP 38750	4	Own T-118	HyF	H	5.62–6.83	Own T-118	O4IHV	284	407	C	TX	60	7x2¾x.21	C
57	WFAX-31		135	200	15000		7.50/20	8.25/20	Own T-118	6–3⅞x4¼	236	6.6	192	109–3600	4–2½x5.0	N	NP 38750	4	Eat A5-1350	SFd	H	5.83–8.11	Own T-118	O4IHV	284	407	C	TX	60	7x2¾x.21	C
58	(c.o.e.) WFMX		105	159	15500		7.50/20	8.25/20	Own T-128	6–3⅞x4¼	236	6.6	192	109–3600	4–2½x5.0	N	NP 38780	4	Own T-128	HyF	H	5.62–6.83	Own T-128	O4IHV	284	407	C	TX	60	7x2¾x☆	C
59	(c.o.e.) WFMAX		105	159	15500		7.50/20	8.25/20	Own T-128	6–3⅞x4¼	236	6.6	192	109–3600	4–2½x5.0	N	NP 38780	4	Eat A5-1350	SFd	H	5.83–8.11	Own T-128	O4IHV	284	407	C	TX	60	7x2¾x☆	C
60	WG-40		136	220	15500		6.00/20D	8.25/20	Own T-120	6–3⅞x4½	250	6.6	204	114–3600	4–2½x5.0	Y	NP 39240	5	Own T120	HyF	H	5.11–7.16	Own T120	O4IHV	359	503	C	TX	60‡‡	8☆x2‡‡x☆	C
61	WGA-40		136	220	15500		6.00/20D	8.25/20	Own T-120	6–3⅞x4½	250	6.6	204	114–3600	4–2½x5.0	Y	NP 39240	5	Eat A5-1350	SFd	H	Dual Rge.	Own T120	O4IHV	359	503	C	TX	60‡‡	8☆x2‡‡x☆	C
62	WGAX-40		136	220	16000		9.00/20D°	9.00/20°	Own T-120	6–3⅞x4½	250	6.6	204	114–3600	4–2½x5.0	Y	NP 39240	5	Eat 16500	SFd	H	Dual Rge.	Own T120	O4IHV	391	609	C	TX	60‡‡	8☆x2‡‡x☆	C
63	(c.o.e.) WGM-40		105	159	16000		6.00/20D	8.25/20	Own T-130	6–3⅞x4½	250	6.6	204	114–3600	4–2½x5.0	Y	NP 39290	5	Own T130	HyF	H	5.11–7.16	Own T130	O4IHV	359	503	C	TX	60	8☆x2‡‡x☆	C
64	(coe) WGMA-40		105	159	16000		6.00/20D	8.25/20	Own T-130	6–3⅞x4½	250	6.6	204	114–3600	4–2½x5.0	Y	NP 39290	5	Eat A5-1350	SFd	H	Dual Rge.	Own T130	O4IHV	359	503	C	TX	60	8☆x2‡‡x☆	C
65	(coe) WGMAX-40		105	159	16500		9.00/20D°	9.00/20°	Own T-130	6–3⅞x4½	250	6.6	204	114–3600	4–2½x5.0	Y	NP 39290	5	Eat 16500	SFd	H	Dual Rge.	Own T130	O4IHV	391	609	C	TX	60	8☆x2‡‡x☆	C
66	WH-45		136	220	15500		6.50/20D	8.25/20	Own T-120	6–3⅞x4½	250	6.6	204	114–3600	4–2½x5.0	Y	NP 39240	5	Own T120	HyF	H	5.11–7.16	Own T120	O4IHV	359	503	C	TX	60‡‡	8☆x2‡‡x☆	C
67	WHA-45		136	220	15500		6.50/20D	8.25/20	Own T-120	6–3⅞x4½	250	6.6	204	114–3600	4–2½x5.0	Y	NP 39240	5	Eat A5-1350	SFd	H	Dual Rge.	Own T120	O4IHV	359	503	C	TX	60‡‡	8☆x2‡‡x☆	C
68	WHAX-45		136	220	16000		9.00/20D°	9.00/20°	Own T-120	6–3⅞x4½	250	6.6	204	114–3600	4–2½x5.0	Y	NP 39240	5	Eat 16500	SFd	H	Dual Rge.	Own T120	O4IHV	391	609	C	TX	60‡‡	8☆x2‡‡x☆	C
69	(c.o.e.) WHM-45		105	159	16000		6.50/20D	8.25/20	Own T-130	6–3⅞x4½	250	6.6	204	114–3600	4–2½x5.0	Y	NP 39290	5	Own T130	HyF	H	5.11–7.16	Own T130	O4IHV	359	503	C	TX	60	8☆x2‡‡x☆	C
70	(coe) WHMA-45		105	159	16000		6.50/20D	8.25/20	Own T-130	6–3⅞x4½	250	6.6	204	114–3600	4–2½x5.0	Y	NP 39290	5	Eat A5-1350	SFd	H	Dual Rge.	Own T130	O4IHV	359	503	C	TX	60	8☆x2‡‡x☆	C
71	(coe) WHMAX-45		105	159	16500		9.20/20D°	9.00/20°	Own T-130	6–3⅞x4½	250	6.6	204	114–3600	4–2½x5.0	Y	NP 39290	5	Eat 16500	SFd	H	Dual Rge.	Own T130	O4IHV	391	609	C	TX	60	8☆x2‡‡x☆	C
72	WJ-55		136	235	18500		7.50/20D	9.00/20	Own T-136	6–3¾x4¼	281	6.5	225	115–3200	7–3x11.2	Y	NP 39460	5	TimH100DPH	HyF	H	6.80–7.20	Tim T136	T4IHV	396	609	C	TX	60‡‡	8☆x2½x☆	C
73	WJA-55		136	235	18500		7.50/20D	9.00/20	Own T-136	6–3¾x4¼	281	6.5	225	115–3200	7–3x11.2	Y	NP 39460	5	TimH300DPH	HyF	H	Dual Rge.	Tim T136	T4IHV	396	609	C	TX	60‡‡	8☆x2½x☆	C
74	WK-65		136	196	21000		8.25/20D	10.00/20	Own T-135	6–3¾x5	331	6.5	270	128–3000	7–3x11.2	Y	NP 39440	5	Tim L100DPH	HyF	H	6.83–7.40	Tim 32500NX14	T4IHV	424	666	C	TX	60‡‡	8☆x2½x☆	C

■—Rear only: front 8.25/20. ‡‡ Two speed axles available. □ Chevrolet own rear axle (5.43:1) available on Models QJ-QK-QL. Chevrolet own 2-speed rear axle (6.13-8.10:1) available at extra cost on Models QV8-QW8-QP-QP8-QR-QR8-Q8-Q88-QV-QW-QX. ♦ 7.50/17 tire is optional for Rear, or Front & Rear, with no increase in G.V.W. ▽ With Spl 703A with 3 forward speeds. ‡ Front only; Rear 6.50/20S. ▲ 7.50/20 can be used on the front with no change in 15000 G.V.W. ● Own Loadmaster engine available on models QJ-QK-QL at extra cost. ‖—Rear only; front 7.50/20. △ Front only: Rear 7.00/16S. ■ Sleeper cab models available in 25-27-28 Series with 25 inch longer wheelbase. ‡—1 Front 1.35x1.312; 3 Center 1.375x.870; 1 Rear 1.500x1.499. ♦ ♦ Diameter: Front, 2.6870; Front Center, 2.7180; Rear Center, 2.7490; Rear, 2.7800; Total length, 5½. ▼ Includes cab. ▽ Includes weight of spare tire which is not included for all other models.

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SEALED POWER

has the only Ring with the

Full-Flow Spring

6 exclusive advantages!

The Sealed Power MD-50 Steel Oil Ring now has the greatest steel ring improvement in 10 years! Sealed Power engineers have done it again! This new Sealed Power Full-Flow Spring is the *only spring made* which insures complete freedom of oil flow—through ring, spring, and piston groove oil holes or vents! It's the best because:

1. **Increased direct ventilation of new Full-Flow Spring gives improved oil economy over a longer period.**
2. **The double ventilation in the new Full-Flow design gives far greater independent spring action to steel segments—an important feature in tapered and out of round bores.**
3. **New Full-Flow Spring leaves all slots in cast iron spacer and all oil holes in piston open and unobstructed for full flow of oil, making it highly resistant to carbon formation.**
4. **Exclusive design of new Full-Flow Spring compensates for greater variation in groove depth without loss of tension.**
5. **Exclusive design of new Full-Flow Spring, giving a greater bearing area at points of contact with both piston and ring, assures longer spring life.**
6. **The Full-Flow Spring will absolutely retain its original efficiency and inherent shape characteristics throughout the life of the ring.**

Only the new Sealed Power Full-Flow Spring gives you all these advantages. Available in Sealed Power "X" Sets featuring the MD-50 Steel Oil Ring—THE ONLY RING WITH THE FULL-FLOW SPRING! Sealed Power Corporation, Muskegon, Michigan. In Canada, Stratford, Ont.

Piston Rings, Pistons, Cylinder Sleeves, Piston Pins, Valves, Water Pumps, Bolts, Bushings, Tie Rods, Front End Parts

The only ring with the Full-Flow Spring!

SEALED POWER

Piston Rings

BEST IN NEW TRUCKS! BEST IN OLD TRUCKS!

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(Continued from Page 80)

Line Number	MAKE AND MODEL	Chassis List Price	WHEEL-BASE Minimum Standard	WHEEL-BASE Maximum Standard	Gross Vehicle Weight for Normal Service	Chassis Weight (See definition)	TIRE SIZES D-dual rear S-single rear Standard Front and Rear	TIRE SIZES Maximum Authorized Tire Size (Duals unless noted)	ENGINE DETAILS Make and Model	No. of Cylinders, Bore and Stroke	Displacement	Comp. Ratio	Torque lb. ft.	Max. Brake H.P. at R.P.M. Given	Main Bearings Number, Diameter and Length	Governor Standard	TRANSMISSION Make and Model	TRANSMISSION Forward Sp'ds	REAR AXLE Make and Model	REAR AXLE Gear and Type Drive & Torque	REAR AXLE Gear Ratio Range in High	FRONT AXLE Make and Model	BRAKES SERVICE Make Location Type Operat'n	BRAKES SERVICE Lining Area	BRAKES SERVICE Drum Area	BRAKES SERVICE Drum Material	BRAKES Hand Location Type	C-A Dimension (Min. Std. W. B.)	FRAME Side Rail Dimensions	FRAME Type
	Dodge Cont'd																													
1	.....WK A-65		136	196	21000	.....	8.25/20D	10.00/20	Own T-135	6–3¾x5	331	6.5	270	128–3000	7–3x11.2	Y	NP 39440	5	Tim L300DPH	HyF H	Dual Rge	Ti 32500NX14	T4IHV	424	666	C	TX	60½	8⅞x2¾x⅜	P
2	.....WR-65		136	196	23000	.....	11.00/20♦	11.00/20♦	Own T-135	6–3¾x5	331	6.5	270	128–3000	7–3x11.2	Y	NP 39440	5	Tim 100DPH	HyF H	6.83–7.80	Tim35020NX9	T4IHV	486	770	C	TX	60½	8⅞x2½x⅜	C
3	.....WRA-65		136	196	23000	.....	11.00/20♦	11.00/20♦	Own T-135	6–3¾x5	331	6.5	270	128–3000	7–3x11.2	Y	NP 39440	5	Tim 300DPH	HyF H	Dual Rge	Tim35020NX9	T4IHV	486	770	C	TX	60½	8⅞x2½x⅜	C
	Dodge (School Bus)																													
4	.....WF-32-S		160	....	14500	.....	6.50/20D	7.50/20	Own T-118	6–3⅛x4¼	236	6.6	192	109–3600	4–2½x5.0	N	NP 38750	4	Own T118	HyF H	6.28–6.83	Own T118	O4IH	284	407	C	TX	.....	7x2¾x.21	C
5	.....WF-34-S		178	....	14500	.....	7.00/20D	7.50/20	Own T-118	6–3⅛x4¼	236	6.6	192	109–3600	4–2½x5.0	N	NP 38750	4	Own T118	HyF H	6.28–6.83	Own T118	O4IHV	284	407	C	TX	.....	7⅛x2⅜x¼	C
6	.....WF-36-S		200	....	14500	.....	7.50/20D	7.50/20	Own T-118	6–3⅛x4¼	236	6.6	192	109–3600	4–2½x5.0	N	NP 38750	4	Own T118	HyF H	6.28–6.83	Own T118	O4IHV	284	407	C	TX	.....	7⅛x2⅜x¼	P
7	.....WH-49-S		220	....	16000	.....	7.50/20D	8.25/20	Own T-120	6–3⅜x4½	250	6.6	204	114–3600	4–2½x5.0	Y	NP 39240	5	Own T120	HyF H	6.28–7.16	Own T120	O4IHV	359	503	C	TX	.....	8⅛x2½x⅜	P
8	.....WJ-59-S		235	....	18500	.....	9.00/20D	9.00/20	Own T-136	6–3¾x4¼	282	6.5	225	115–3200	7–3x11.2	Y	NP 39460	5	TimH100DPH	HyF H	6.8–7.2	Tim32525NX1	T4IHV	396	609	C	TX	.....	8⅛x2½x⅜	P
9	Duplex.....T		136	220	18000	6600	8.25/20	9.00/20	Her JXD	6–4x4¼	320	6.2	240	113–3000	7–2½x10‡	Y	Fu 5B330	5	Tim H100	B	H	** –6.83	Tim 32502	L4IHV	420	654	A	TX	59	9½x3½x⅜	C
10	Duplex..TH-404		136	154	18000	6900	8.25/20	9.00/20	Her WXLC3	6–4¼x4¼	404	5.8	312	139–2600	7–2½x10‡	Y	FU-5A430	5	Tim H-300	DF	H	6.13–8.15	Tim 32502	L4IHV	420	654	A	TX	59	9½x3½x⅜	C
11	.....R		136	220	25000	8820	9.00/20	10.00/20	Her WXLC-3	6–4¼x4¼	404	5.8	312	139–2600	7–2¾x13¼	Y	Fu 5A43	5	Tim Q300	DF	R	6.53–8.53	Tim 35000	L4IHV	730	1016	A	TX	79¼	9¼x3½x⅜	C
12	.....JHA		148	220	28000	9800	10.00/20D	11.00/20	Her RXB	6–4½x5¼	501	5.4	360	121–2200	7–3x14	Y	Fu 5A620	2	Tim S200	2F	R	** –9.83	Tim 26450	Ws4IA	912	1311	A	TX	79	10½x3½x⅜	C
13	.....JH-558		148	220	28000	9800	10.00/20	11.00/20	Her RXLD	6–4¼x5¼	558	6.3	430	154–2400	7–3½x13¼	Y	FU-5A650	5	Tim S-300	DF	R	6.53–8.53	Tim 26450	Ws4IA	912	1311	A	TX	79	10½x3½x⅜	C
14	.....KHA		148	220	32000	10500	11.00/20	11.00/20	Her RXC	6–4½x5¼	529	5.4	395	132–2300	7–3x14¼	Y	Fu 5A620	2	Tim U-200	2F	R	** –9.83	Tim 26450	Ws4IA	912	1311	A	TX	79	10½x3½x⅜	C
15	.....L		148	220	36000	11100	11.00/20	11.00/20	Her RXLD	6–4¼x5¼	558	5.4	425	154–2400	7–3½x13¼	Y	Fu 5C650	5	Tim U-200	2F	R	** –9.83	Tim 26450	Ws4IA	912	1311	A	TX	79	10½x3½x⅜	C
16	Federal.....16M		146	194	13500	4460	7.50/20D	7.50/20	Her JXEF	6–3¼x4¼	245	6.5	180	87–3000	7–2½x10‡	N	WG T9	4	T 53547DPH	BF	H	** –5.66	Tim 30000HX	L4IHV	310	482	a	TX	67	8⅛x2½x¼	T
17	.....18M		146	194	15000	4700	8.25/20D	8.25/20	Her JXBF	6–3¾x4¼	263	6.5	189	93–3000	7–2½x10‡	N	WG T9	4	Tim E100DPH	SF	H	** –6.20	Tim 30003H	LT4IHV	314	532	a	TX	67	8⅛x2½x¼	T
18	.....18M2		146	194	15000	4830	8.25/20D	8.25/20	Her JXBF	6–3¾x4¼	263	6.5	189	93–3000	7–2½x10‡	N	WG T9	8	Tim E300DPH	dF	H	6.13–8.10	Tim 30003H	LT4IHV	314	532	a	TX	67	8⅛x2½x¼	T
19	.....25M		146	194	17500	4950	8.25/20D	9.00/20	Her JXCF	6–3¾x4¼	282	6.5	212	102–3000	7–2½x10‡	N	Cla 205VO	5	TimH100DPH	SF	H	** –6.80	Tim 3100H	LT4IHV	346	583	a	TX	67	8⅛x2½x¼	T
20	.....25M2		146	194	17500	5100	8.25/20D	9.00/20	Her JXCF	6–3¾x4¼	282	6.5	212	102–3000	7–2½x10‡	N	Cla 205VO	5	TimH300DPH	dF	H	6.13–8.15	Tim 3100H	LT4IHV	346	583	a	TX	67	8⅛x2½x¼	T
21	.....29M		146	194	20000	5500	9.00/20D	10.00/20	Her JXDF	6–4x4¼	320	6.5	246	112–2800	7–2½x10‡	Y	Cla 205V	5	Tim L100DPH	SF	H	** –6.83	Tim 32514H	LT4IHV	466	820	a	TX	67	8⅛x2½x¼	T
22	.....29M2		146	194	20000	5690	9.00/20D	10.00/20	Her JXDF	6–4x4¼	320	6.5	246	112–2800	7–2½x10‡	Y	Cla 205V	10	Tim L300DPH	dF	H	6.32–8.22	Tim 32514H	LT4IHV	466	820	a	TX	67	8⅛x2½x¼	T
23	.....29MA		155	194	20000	5950	9.00/20D	10.00/20	Her JXDF	6–4x4¼	320	6.5	246	112–2800	7–2½x10‡	Y	Cla 205V†	15	Tim L100DPH	SF	H	** –6.83	Tim 32514H	LT4IHV	466	820	a	TD	76	8⅛x2½x¼	T
24	.....29ML		146	194	20000	5535	9.00/20D	10.00/20	Herc JXLDF	6–4x4½	339	6.5	264	119–2800	7–2½x10‡	Y	Cla 205V	5	Tim L100DPH	SF	H	** –6.83	Tim 32514H	LT4IHV	466	820	a	TX	67	8⅛x2½x¼	T
25	.....29ML2		146	194	20000	5725	9.00/20D	10.00/20	Herc JXLDF	6–4x4½	339	6.5	264	119–2800	7–2½x10‡	Y	Cla 205V	10	Tim L300DPH	dF	H	6.32–8.22	Tim 32514H	LT4IHV	466	820	a	TX	67	8⅛x2½x¼	T
26	.....29MLA		155	194	20000	5985	9.00/20D	10.00/20	Herc JXLDF	6–4x4½	339	6.5	264	119–2800	7–2½x10‡	Y	Cla 205V	15	Tim L100DPH	SF	H	** –6.83	Tim 32514H	LT4IHV	466	820	a	TD	76	8⅛x2½x¼	T
27	.....35M		143	203	21000	6925	9.00/20D	10.00/20	Con T6371	6–4⅛x4⅝	371	6.6	290	133–2600	7–2¾x13½	Y	Cla 270VO	5	Tim L100DPH	SF	R	**–6.83	Tim 32514H	LT4IHV	466	820	a	TX	60½	10½x3½x⅜	T
28	.....35M2		143	203	21000	7115	9.00/20D	10.00/20	Con T6371	6–4⅛x4⅝	371	6.6	290	133–2600	7–2¾x13½	Y	Cla 270VO	10	Tim L300DPH	dF	R	6.32–8.22	Tim 32514H	LT4IHV	466	820	a	TX	60½	10½x3½x⅜	T
29	.....45M		143	203	24000	8005	10.00/22D	10.00/24	Con B6427	6–4¼x4⅛	427	6.4	332	133–2600	7–2¾x13½	Y	Cla 270VO	5	Tim Q100P	8F	R	** –6.83	Tim 35011TW	TW4IA	606	933	a	TD	60½	10½x3½x⅜	T
30	.....45M2		143	203	24000	8386	10.00/22D	10.00/24	Con B6427	6–4¼x4⅛	427	6.4	332	133–2600	7–2¾x13½	Y	Cla 270VO	10	Tim Q300P	dF	R	6.53–8.53	Tim 35011TW	TW4IA	606	933	a	TD	60½	10½x3½x⅜	T
31	.....55M2		143	203	27000	8635	11.00/22D	11.00/24	Con B6427	6–4¼x4⅛	427	6.4	332	133–2600	7–2¾x13½	Y	Cla 270VO	10	Tim S300P	HyF	R	6.53–8.53	Tim 36021TW	Tw4IA	722	1051	a	TD	60½	10½x3½x⅜	T
32	.....55MA		155	203	27000	8765	11.00/22D	11.00/24	Con B6427	6–4¼x4⅛	427	6.4	332	133–2600	7–2¾x13½	Y	Cla 270V†	15	Tim S-200P	2F	R	** –7.08	Tim 36021TW	TW4IA	722	1051	a	TD	72½	10½x3½x⅜	T
33	.....60MA		155	203	28000	9600	11.00/22D	11.00/24	Con 22R	6–4½x5¼	501	5.4	384	148–2400	7–2¾x14½	Y	Fu 5A65‖	2	Tim S200P	2F	R	** –7.08	Tim 36021TW	Tw4IA	722	1051	a	FX	72½	10½x3½x⅜	T
34	.....60M2		143	203	28000	9370	11.00/22D	11.00/24	Con 22R	6–4½x5¼	501	5.4	384	148–2400	7–2¾x14½	Y	Fu 5A650	10	Tim S300P	HyF	R	6.53–8.53	Tim 36021TW	Tw4IA	722	1051	a	TX	60½	10½x3½x⅜	T
35	.....65M2		141	201	30000	9995	11.00/22D	11.00/24	Con R6602	6–4⅛x5⅛	602	6.1	464	200–2600	7–3¼x14½	Y	Fu 5A650	10	Tim S300P	HyF	R	6.53–8.53	Tim 36000TW	Ws4IA	722	1051	a	TX	60½	10½x3½x⅜	T
36	.....65MA		153	201	30000	10225	11.00/22D	11.00/24	Con R6602	6–4⅛x5⅛	602	6.1	464	200–2600	7–3¼x14½	Y	Fu 5A65‖	15	Tim S200P	HyF	R	** –7.08	Tim 36000TW	Ws4IA	722	1051	a	TX	72½	10½x3½x⅜	T
	Ford Light Duty																													
37	Chs. Cowl..79C	878	114	114	4700	‡2276	6.50/16S	6.50/16S	Own 59C	8–3⅛x3¼	239	6.7	180	100–3800	3–2½x4.96	N	Own 21C	3	Own 21C	S¼	H	** –3.78	Own 21C	O4IH	162	264	Co	21	40.06	5.92x2½x.15	T
38	Chs. Cowl..7GC	848	114	114	4700	‡2276	6.50/16S	6.50/16S	Own 5GC	6–3.3x4.4	226	6.7	180	90–3300	4–2½x4.88	N	Own 2GC	3	Own 21C	S¼	H	** –3.78	Own 21C	O4IH	162	264	Co	21	40.06	5.92x2½x.15	T
39	Chs. Cowl...79Y	1062	122	122	6600	‡2776	7.50/17S▽	7.50/17S▽	Own 59Y	8–3⅛x3¼	239	6.7	180	100–3800	3–2½x4.96	N	Own 51Y	4	Own 21Y	8F	H	** –4.85	Own 21Y	O4IH	187	308	Co	21	48.06	6x2¼x.19	T
40	Chs. Cowl..7GY	1032	122	122	6600	‡2776	7.50/17S▽	7.50/17S▽	Own 5GY	6–3.3x4.4	226	6.7	180	90–3300	4–2½x4.88	N	Own 51Y	4	Own 21Y	8F	H	** –4.85	Own 21Y	O4IH	187	308	Co	21	48.06	6x2¼x.19	T
	Heavy Duty Dump																													
41	Chs. Cowl..79U	1273	134	134	12500	‡3911	7.50/20D	7.50/20	Own 59T	8–3⅛x3¾	239	6.7	180	100–3800	3–2½x4.96	N	Own 41T	4	Own 01T	8F	H	** –6.66	Own 01T	O4IH	303	506	Co	TX	60.06	7x2¼x.21	LT
42	Chs. Cowl..7GU	1243	134	134	12500	‡3911	7.50/20D	7.50/20	Own 5GT	6–3.3x4.4	226	6.7	180	90–3300	4–2½x4.88	N	Own 4GT	4	Own 01T	8F	H	** –6.66	Own 01T	O4IH	303	506	Co	TX	60.06	7x2¼x.21	LT
	Heavy Duty Truck																													
43	Chs. Cowl..79T	1261	134	134	12500	‡3906	7.50/20D	7.50/20	Own 59T	8–3⅛x3¼	239	6.7	180	100–3800	3–2½x4.96	N	Own 41T	4	Own 01T	8F	H	** –6.66	Own 01T	O4IH	303	506	Co	TX	60.06	7x2¼x.21	LT
44	Chs. Cowl..7GT	1231	134	134	12500	‡3906	7.50/20D	7.50/20	Own 5GT	6–3.3x4.4	226	6.7	180	90–3300	4–2½x4.88	N	Own 4GT	4	Own 01T	8F	H	** –6.66	Own 01T	O4IH	303	506	Co	TX	60.06	7x2¼x.21	LT
45	Chs. Cowl..798T	1291	158	158	12500	‡3986	7.50/20D	7.50/20	Own 59T	8–3⅛x3¼	239	6.7	180	100–3800	3–2½x4.96	N	Own 41T	4	Own 01T	8F	H	** –6.66	Own 01T	O4IH	303	506	Co	TX	84.06	7x2¼x.21	LT
46	Chs. Cowl.7G8T	1261	158	158	12500	‡3986	7.50/20D	7.50/20	Own 5GT	6–3.3x4.4	226	6.7	180	90–3300	4–2½x4.88	N	Own 4GT	4	Own 01T	8F	H	** –6.66	Own 01T	O4IH	303	506	Co	TX	84.06	7x2¼x.21	LT
	Heavy Duty COE																													
47	Cab Chs...791W	1555	101	101	13500	‡4333	7.50/20D	7.50/20	Own 59W	8–3⅛x3¼	239	6.7	180	100–3800	3–2½x4.96	N	Own 41T	4	Own 01T	8F	H	** –6.66	Own 01W	O4IH	303	506	Co	TX	60.06	7x2¼x.21	T
48	Cab Chs...79W	1585	134	134	13500	‡4468	7.50/20D	7.50/20	Own 59W	8–3⅛x3¼	239	6.7	180	100–3800	3–2½x4.96	N	Own 41T	4	Own 01T	8F	H	** –6.66	Own 01W	O4IH	303	506	Co	TX	93.06	7x2¼x.21	LT
49	Cab Chs...798W	1615	158	158	13500	‡4543	7.50/20	7.50/20	Own 59W	8–3⅛x3¼	239	6.7	180	100–3800	3–2½x4.96	N	Own 41T	4	Own 01T	8F	H	** –6.66	Own 01W	O4IH	303	506	Co	TX	117.1	7x2¼x.21	LT
	Heavy Duty Dump																													
50	Chs. Cowl.79UH	1603	134	134	14500	‡4076	8.25/20^A D	8.25/20^A	Own 59T	8–3⅛x3¼	239	6.7	180	100–3800	3–2½x4.96	N	Own 41T	4	Own 59T-M■	8FD	H	5.83–8.11	Own 01T	O4IHV	303	506	Co	TX	60.06	7x2¼x.21	LT
51	Chs.Cowl.7GUH	1573	134	134	14500	‡4076	8.25/20^A D	8.25/20^A	Own 5GT	6–3.3x4.4	226	6.7	180	90–3300	4–2½x4.88	N	Own 4GT	4	Own 59T-M■	8FD	H	5.83–8.11	Own 01T	O4IHV	303	506	Co	TX	60.06	7x2¼x.21	LT
	Heavy Duty Truck																													
52	Chs. Cowl.79TH	1591	134	134	14500	‡4071	8.25/20^A D	8.25/20^A	Own 59T	8–3⅛x3¼	239	6.7	180	100–3800	3–2½x4.96	N	Own 41T	4	Own 59T-M■	8FD	H	5.83–8.11	Own 01T	O4IHV	303	506	Co	TX	60.06	7x2¼x.21	LT
53	Chs.Cowl.7GTH	1561	134	134	14500	‡4071	8.25/20^A D	8.25/20^A	Own 5GT	6–3.3x4.4	226	6.7	180	90–3300	4–2½x4.88	N	Own 4GT	4	Own 59T-M■	8FD	H	5.83–8.11	Own 01T	O4IHV	303	506	Co	TX	60.06	7x2¼x.21	LT
54	Chs.Cowl.798TH	1621	158	158	14500	‡4151	8.25/20^A D	8.25/20^A	Own 59T	8–3⅛x3¼	239	6.7	180	100–3800	3–2½x4.96	N	Own 41T	4	Own 59T-M■	8FD	H	5.83–8.11	Own 01T	O4IHV	303	506	Co	TX	84.06	7x2¼x.21	LT
55	Chs.Cowl.7G8TH	1591	158	158	14500	‡4151	8.25/20^A D	8.25/20^A	Own 5GT	6–3.3x4.4	226	6.7	180	90–3300	4–2½x4.88	N	Own 4GT	4	Own 59T-M■	8FD	H	5.83–8.11	Own 01T	O4IHV	303	506	Co	TX	84.06	7x2¼x.21	LT
	Heavy Duty COE																													
56	Cab Chs.791WH	1885	101	101	15000	‡4498	8.25/20^A D	8.25/20^A	Own 59W	8–3⅛x3¼	239	6.7	180	100–3800	3–2½x4.96	N	Own 41T	4	Own 59T-M■	8FD	H	5.83–8.11	Own 01W	O4IHV	303	506	Co	TX	60.06	7x2¼x.21	T
57	Cab Chs..79WH	1915	134	134	15000	‡4633	8.25/20^A D	8.25/20^A	Own 59W	8–3⅛x3¼	239	6.7	180	100–3800	3–2½x4.96	N	Own 41T	4	Own 59T-M■	8FD	H	5.83–8.11	Own 01W	O4IHV	303	506	Co	TX	93.06	7x2¼x.21	LT
58	Cab Chs.798WH	1945	158	158	15000	‡4708	8.25/20^A D	8.25/20^A	Own 59W	8–3⅛x3¼	239	6.7	180	100–3800	3–2½x4.96	N	Own 41T	4	Own 59T-M■	8FD	H	5.83–8.11	Own 01W	O4IHV	303	506	Co	TX	117.1	7x2¼x.21	LT
	School Bus																													
59	Cowl Chs.,.798T	1346	158	158	13500	‡3970	7.50/20D	7.50/20	Own 59T	8–3⅛x3¼	239	6.7	180	100–3800	3–2½x4.96	N	Own 41T	4	Own 01T	8F	H	** –6.66	Own 01T	O4IH	303	506	Co	TX	.....	7x2¼x.21	T
60	Cowl Chs..7G8T	1316	158	158	13500	‡3970	7.50/20D	7.50/20	Own 5GT	6–3.3x4.4	226	6.7	180	90–3300	4–2½x4.88	N	Own 4GT	4	Own 01T	8F	H	** –6.66	Own 01T	O4IH	303	506	Co	TX	.....	7x2¼x.21	T
61	Cowl Chs.,.794T	1454	194	194	14500	‡4140	7.50/20D	7.50/20	Own 59T	8–3⅛x3¼	239	6.7	180	100–3800	3–2½x4.96	N	Own 41T	4	Own 01T	8F	H	** –6.66	Own 01T	O4IH	303	506	Co	TX	.....	7x2¼x.21	LT
62	Cowl Chs..7G4T	1424	194	194	14500	‡4140	7.50/20D	7.50/20	Own 5GT	6–3.3x4.4	226	6.7	180	90–3300	4–2½x4.88	N	Own 4GT	4	Own 01T	8F	H	** –6.66	Own 01T	O4IH	303	506	Co	TX	.....	7x2¼x.21	LT
63	Hudson (¾T. Pkp)		128	128	4810	.....	6.50/16-6	6.50/16-6	Own 178	6–3x5	212	6.5	168	102–4000	3– ▲▲	N	Own	3	Own	8½	H	** –4.55	Own	B4IH	141	242	C	2I	42½	7⅝x1¾x⅜	B
64	Intern'l (2)...KB-1	800	113	125	4400	2190	6.00/16-4	7.00/16	Own GRD214	6–3⅛x4½	213	6.3	160	82–3400	4–2¼x6‡	N	Own HDS-B	3	Own R1050	8½	H	3.72–5.11	Own F50	L4IH	164	316	e	FX	38	6x2¼x1½	C
65	.....KB-1M	755	102	113	4600	2090	6.00/16-4	6.50/16-6	Own GRD214	6–3⅛x4½	213	6.3	160	82–3400	4–2¼x6‡	N	O SA-HDS-B	3	Own R1050	8½	H	3.72–5.11	Own F150	L4IH	164	316	e	FX	.....	6½x2¼x⅜	C
66	.....KB-2	840	125	125	5200	2225	6.00/16-4	7.00/16-6	Own GRD214	6–3⅛x4½	213	6.3	160	82–3400	4–2¼x6‡	N	Own HDS-B	3	Own R1050	8½	H	3.72–5.11	Own F50	L4IH	164	316	e	FX	50	6⅜x2¼x⅜	C

(Turn to Page 84, Please)

▽ Rear Only; Front 7.00/17. ▲ Rear Only; Front 7.50/20 ‡ For shorter wheel bases 8½x2⅞x⅜. ▲ On 146" and 155" wheel bases, thickness is ⅜". ♦ Dual Rear only; Front 10.00/20
● For shorter wheel bases—10x3½x¼. ▲▲ Diameter front 2.343. Center 2.375, Rear 2.406. Total length 5.750. † Auxiliary trans. Spicer 6231B, three forward speeds.
‖ Auxiliary trans. Spicer 703F, three forward speeds. ‡ Weight of complete vehicle with 5 gal. of gas. ■ Two speed rear axle with vacuum shift and power braking.

THE NEW EXIDE BATTERIES

Extra power...extra long life...plus a low cost per mile of operation

You get all three when your trucks are equipped with Exide Batteries. And with that extra power, long life and economy, you get assurance of trustworthy performance at any season of the year.

This new, extra capacity Exide Battery is a product of vast wartime experience on automotive equipment of every kind. This valuable experience has been combined with Exide engineering and manufacturing skill to produce a battery that fleet owners can always count on for dependability, long life and ease of maintenance.

IMPORTANT NEW FEATURES

- Heavy, over-size plates.
- Greater capacity.
- Self-cleaning, non-spitting vent plugs.
- Double insulation between plates.
- "Bull's Eye" electrolyte leveling device.
- Larger, heavier inter-cell connectors.
- Hard rubber container.
- Positive cover seals.

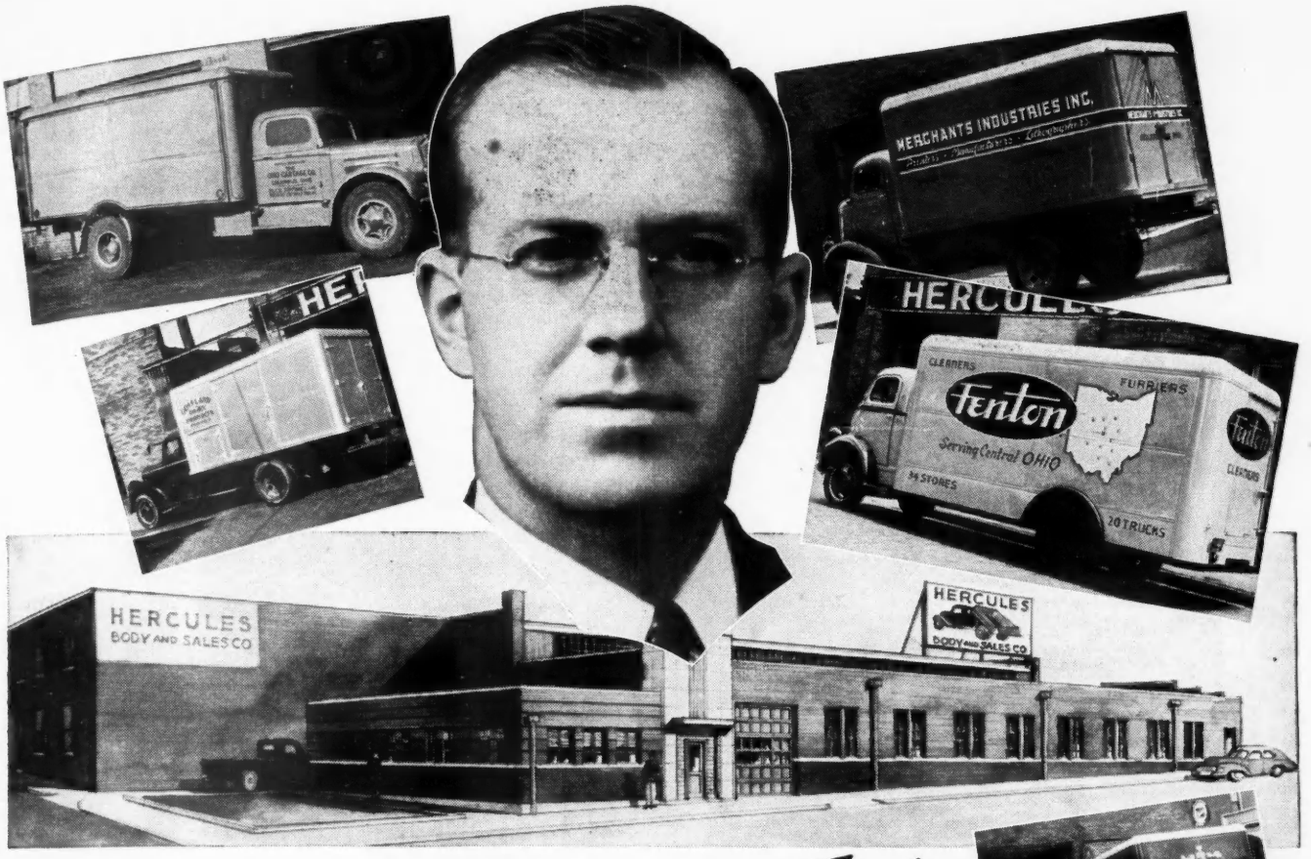
THE ELECTRIC STORAGE BATTERY COMPANY, Philadelphia 32 • Exide Batteries of Canada, Limited, Toronto

(Continued from Page 82)

Line Number	MAKE AND MODEL	Chassis List Price	WHEEL-BASE Minimum Standard	WHEEL-BASE Maximum Standard	Gross Vehicle Weight for Normal Service	Chassis Weight (See definition)	TIRE SIZES D-dual rear S-single rear Standard Front and Rear	TIRE SIZES Maximum Authorized Tire Size (Duals unless noted)	ENGINE DETAILS Make and Model	No. of Cylinders, Bore and Stroke	Displacement	Comp. Ratio	Torque lb. ft.	Max. Brake H.P. at R.P.M. Given	Main Bearings Number, Diameter and Length	Governor Standard	TRANSMISSION Make and Model	Forward Sp'ds	REAR AXLE Make and Model	Gear and Type	Drive & Torque	Gear Ratio Range in High	FRONT AXLE Make and Model	BRAKES SERVICE Make Location Type Operation	Lining Area	Drum Area	Drum Material	Hand Location Type	G-A Dimensions (Min. Std. W. B.)	FRAME Side Rail Dimensions	Type
	Internat'al Cont'd																														
1	KB-3	980	130	....	6650	2970	7.00/16-6	7.50/16-6	Own GRD214	6–3⅞x4½	213	6.3	160	82–3400	4–2½x6	N	Own HD8-B	3	Own R1150	SF	H	4.22–5.28	Own F150	L4IH	195	367	c	FX	55	6½x2⅞x⅜	C
2	KB-3M	905	102	113	7000	2525	7.00/16-6	7.50/16-8	Own GRD214	6–3⅞x4½	213	6.3	160	82–3400	4–2½x6	N	Own H41B	4	Own R1150	SF	H	4.22–5.28	Own F150	L4IH	221	367	c	FX	..	6½x2⅞x⅜	C
3	(a) KB-5	1130	135	177	13500	3630	6.50/20D	8.25/20	O-GRD 233	6–3⅞x4½	233	6.3	181	93–3400	4–2½x6	N	Own H41B	4	Own R1360	SF	H	5.28–7.16	Own F350	LH4IH	294	509	c	TX	60	8x3½	T
4	(a) KB-6	1575	134	176	14500	4530	7.00/20D	8.25/20	Own BLD250	6–3⅞x4½	251	6.3	200	100–3200	4–2½x5	N	Own WT97A	5	Own R1450	SF	H	5.62–7.16	Own 16F470	LH4IHV	305	539	c	TX	60	8¼x3⅜	T
5	(a) KB-7	2000	134	176	16500	4960	7.50/20D	9.00/20	O-BLD 269	6–3⅞x4½	269	6.3	222	100–3000	4–2.75	N	Own F51	5	Own R1560	SF	H	6.50–7.16	Own F470	LH4IHV	368	633	c	TX	60	8¼x3⅜	T
6	(a) KB-8	3050	137	197	20000	6485	9.00/20D	10.00/20	O-RED 361	6–4½x4½	361	6.3	282	126–3000	7–3¼x10	Y	Own F51	5	Own R1572	SF	H	6.43–8.51	Own F553	LH4IHV	407	703	c	PX	60	8 x3½x⅞	T
7	(a) KB-10	3900	149	197	22500	7310	10.00/20D	11.00/20	Own RED401	6–4½x5	401	6.3	318	140–2800	7–3¼x10	Y	Own F52	5	Own R1676	SF	H	6.43–8.05	Own F653	LH4IHV	484	829	c	FX	72	9½x3½x⅞	T
8	(a) KBR-11	5400	149	197	27000	*335	10.00/20D	12.00/20	O-RED 450	6–4½x5	450	6.3	360	148–2600	7–3¼x10	Y	Own F54	5	Tim S200P	2SF	H	6.42–8 05	Own F750	WW4IA	616	1030	G	PX	72	10x3½x⅞	T
9	KBR-12	6650	155	179	28500	9950	11.00/20	12.00/20	O-Con. R6596	6–4½x5½	586	6.0	475	200–2600	7–3¼x13	Y	Own F55	5	Tim S200P	2F	H	** –6.42	Own F750	BW4IA	746	....	GS	FX	66	10x3½x⅞	C
10	(a) KBR-14	7150	161	215	32000	10100	11.00/20	12.00/24	O-Con 6596	6–4½x5½	586	6.0	475	200–2600	7–3¼x13	Y	Own F55B	5	Tim U200P	2F	H	**–7.08	Own F750	BW4IA	746	....	GS	FX	72	10x3½x⅞	C
11	W-3042-H	9900	179	227	30000	1214	10.00/20	11.00/22	O-Con. 86749	6–5½x5½	749	6.0	554	254–2600	7–3¾x15¾	Y	Spl 7741	4	Tim 8200P	2F	H	** –6.42	Own 86303	BW4IA	690	....	G	TX	84	10x3½x⅞	C
12	Kenworth(D) . . 521	.....	161	215	35000	12200	10 00/20	11.00/22	Cum HB6	6–4¼x6	672	17.	500	150–1800	7–4½x16½	Y	BL 7841	4	Tim U200P	DR	H	6.42–7.84	Tim 36000 TW	Ws4IA	752	1050	a	TD	72	9¼x3¼x⅞	C
13	585	.....	150	215	30000	10130	10.00/20	11.00/22	Bu LO525	6–4½x5½	525	5.5	385	150–2200	7–3x11½	Y	Fu 5A620	5	Tim 58415P	....	.	6.14	Tim 36000 TW	Ws4IA	752	....	a	....	70	9¼x3¼x⅞	....
14	Linn. L-2	.....	120	....	9000	6000	7.50/20S	8.25/20S	Her QXC3	6–3¾x4½	221	....	159	77–3200	7–1¾x10	N	WGT9	4	Own 600	N	N	None	Tim F30B28 H	L4IH	306	478	a	T	.....	None	....
15	L-4	.....	156	....	9200	6200	7.50/20S	8.25/20	Her QXC3	6–3½x4½	221	....	159	77–3200	7–1¾x10	N	WGT9	4	Own 600	N	N	None	Tim F30B28 H	L4IH	306	478	a	X	.....	None	....
16	L-6	.....	169	....	12700	7700	7.50/20D	8.25/20	Her JXE3	6–3½x4¼	245	6.5	184	91–3200	7–2½x10	N	WGT9	4	Own 600T	N	N	None	Tim F30B28 H	L6IH	486	744	a	X	.....	None	....
17	L-8	.....	205	....	12900	7900	7.50/20D	8.25/20	Her JXE3	6–3½x4¼	245	6.5	184	91–3200	7–2½x10	N	WGT9	4	Own 600T	N	N	None	Tim F30B28 H	L6IH	486	744	a	X	.....	None	....
18	Mar. Her. . DVL-1	.....	90	118	‡6750	.....	7.50/16S	8.25/18S	Willys MB	4–3¼x4½	134	6.4	105	60–4000	3–2.33x5.48	Y	Own	3	(Front Drive)	.....	.....	7.10	Own	4IH	202	327	M2	.....	.....	None	....
19	Reo. C-19A	.....	125	125	14000	4810▲	7.50/20	8.25/20	Own GC 245	6–3½x4¼	245	6.2	191	89–3100	7–2¼x10.7	Y	WG T97	4	T53547–E300	SFd	H	5.66–6.16*	Tim 30000	T4IVH▼	310	482	var	TX	60⅝	8 x2 x	T
20	C-19T	.....	125	125	14000	5280▲	8.25/20	8.25/20	Own GC 245	6–3½x4¼	245	6.2	191	89–3100	7–2¼x10.7	Y	WG T97	4	Tim E300	HFd	H	6.13&8.10	Tim 30000	T4IVH▼	310	482	var	TX	60⅝	8 x2 x	T
21	C-19B	.....	150	150	14000	4960▲	7.50/20	8.25/20	Own GC 245	6–3½x4¼	245	6.2	191	89–3100	7–2¼x10.7	Y	WG T97	4	T53547–E300	SFd	H	5.66–6.16*	Tim 30000	T4IVH▼	310	482	var	TX	85⅝	8 x2 x	T
22	C-19C	.....	165	165	14000	5030▲	7.50/20	8.25/20	Own GC 245	6–3½x4¼	245	6.2	191	89–3100	7–2¼x10.7	Y	WG T97	4	T53547–E300	SFd	H	5.66–6.16*	Tim 30000	T4IVH▼	310	482	var	TX	100⅝	8 x2 x	T
23	C-19L	.....	180	180	14000	5150▲	8.25/20	8.25/20	Own GC 245	6–3½x4¼	245	6.2	191	89–3100	7–2¼x10.7	Y	WG T97	4	T53547–E300	SFd	H	5.66–6.16*	Tim 30000	T4IVH▼	310	482	var	TX	115⅝	8 x2 x	TF
24	C-21T	.....	130	130	18000	6380▲	9.00/20	9.00/20	Own GC 288	6–3½x5	288	6.2	225	96–3000	7–2½x10.7	Y	Cla 205V–VO	5	Tim H300	HFd	H	6.13&8.15	Tim 31107	T4IVH▼	344	584	var	TX	65⅝	9x3x	T
25	C-21A	.....	130	130	18000	6090▲	9.00/20	9.00/20	Own GC 288	6–3½x5	288	6.2	225	96–3000	7–2½x10.7	Y	Cla 205V	5	Tim H300	HFd	H	6.13&8.15	Tim 31107	T4IVH▼	344	584	var	TX	65⅝	9x3x	T
26	C-21B	.....	150	150	18000	6080▲	8.25/20	9.00/20	Own GC 288	6–3½x5	288	6.2	225	96–3000	7–2½x10.7	Y	Cla 205V–VO	5	Tim H100–300	HFd	H	6.16–6.8*	Tim 31107	T4IVH▼	344	584	var	TX	85⅝	9x3x	T
27	C-21C	.....	165	165	18000	6220▲	9.00/20	9.00/20	Own GC 288	6–3½x5	288	6.2	225	96–3000	7–2½x10.7	Y	Cla 205V–VO	5	Tim H100–300	HFd	H	6.16–6.8*	Tim 31107	T4IVH▼	344	584	var	TX	100⅝	9x3x	TF
28	C-21L	.....	180	180	18000	6370▲	9.00/20	9.00/20	Own GC 288	6–3½x5	288	6.2	225	96–3000	7–2½x10.7	Y	Cla 205V	5	Tim H100–300	HFd	H	–6.8*	Tim 31107	T4IVH▼	344	584	var	TX	115⅝	9x3x	TF
29	C-22T	.....	130	130	20500	6630▲	9.00/20	9.00/20	Own GC 310	6–3½x5	310	6.2	243	101–3000	7–2½x10.7	Y	Cla 205V–VO	5	Tim H300	HFd	H	6.13&8.15	Tim 31107	T4IVH▼	344	584	var	TX	65⅝	9¼x3 x	T
30	C-22A	.....	130	130	20500	6220▲	9.00/20	9.00/20	Own GC 310	6–3½x5	310	6.2	243	101–3000	7–2½x10.7	Y	Cla 205V	5	Tim H300	HFd	H	6.13&8.15	Tim 31107	T4IVH▼	344	584	var	TX	65⅝	9¼x3 x	T
31	C-22B	.....	150	150	20500	6220▲	9.00/20	9.00/20	Own GC 310	6–3½x5	310	6.2	243	101–3000	7–2½x10.7	Y	Cla 205V–VO	5	Tim H Series	HFd	H	6.16–7.3*	Tim 31107	T4IVH▼	344	584	var	TX	85⅝	9¼x3 x	T
32	C-22C	.....	165	165	20500	6410▲	9.00/20	9.00/20	Own GC 310	6–3½x5	310	6.2	243	101–3000	7–2½x10.7	Y	Cla 205V–VO	5	Tim H100–300	HFd	H	6.16–6.8*	Tim 31107	T4IVH▼	34a	584	var	TX	100⅝	9¼x3 x	TF
33	C-22L	.....	185	185	20500	6490▲	9.00/20	9.00/20	Own GC 310	6–3½x5	310	6.2	243	101–3000	7–2½x10.7	Y	Cla 205V	5	Tim H100–300	HFd	H	6.16*	Tim 31107	T4IVH▼	344	584	var	TX	120⅝	9¼x3 x	TF
34	C-23T	.....	130	130	23000	8100▲	10.00/20	10.00/20	Con T-6371	6–4½x4½	371	6.3	292	133–2800	7–2½x13.5	Y	Cla 270V–VO	5	Tim L-Series	HF	H	6.83*	Tim 32500	Ws4IA	514	784	Var	TX	65⅝	9¼x3 x	T
35	C-23B	.....	150	150	23000	7380▲	10.00/20	10.00/20	Con T-6371	6–4½x4½	371	6.3	292	133–2800	7–2½x13.5	Y	Cla 270VO	5	Tim L-200	HF2	H	8.22	Tim 32500	T41VH▼	370	644	Var	TX	85⅝	9¼x3 x	T
36	C-23L	.....	185	185	23000	7500▲	10.00/20	10.00/20	Con T-6371	6–4½x4½	371	6.3	292	133–2800	7–2½x13.5	Y	Cla 270VO	5	Tim L-100-300	HF	H	6.83*	Tim 32500	Ws4IA	514	784	Var	TX	120⅝	9¼x3 x	Tf
37	C-25T	.....	130	130	27400	8700▲	10.00/20	10.00/22	Con T-6427	6–4¼x4½	427	6.2	336	153–2800	7–2½x13.5	Y	Cla 270V–VO	5	Tim Q300	HFd	H	6.53–8.53	Tim 35000	Ws4IA	586	848	Var	TX	65⅝	9¼x3 x	T
38	C-25B	.....	150	150	27400	8570▲	10.00/20	10.00/20	Con T-6427	6–4¼x4½	427	6.2	336	153–2800	7–2½x13.5	Y	Cla 270VO	5	Tim S200P	HF2	H	7.84	Tim 35000	Ws4IA	660	952	Var	TX	85⅝	9¼x3 x	T
39	C-25BT	.....	150	150	27400	9360▲	10.00/20	10.00/20	Con T-6427	6–4¼x4½	427	6.2	336	153–2800	7–2½x13.5	Y	Cla 270VO‡	15	Tim S200P	HF2	H	7.84	Tim 35000	Ws4IA	660	952	Var	TD	85⅝	9¼x3 x	T
40	C-25BL	.....	150	150	27400	9310▲	10.00/20	10.00/20	Con T-6427	6–4¼x4½	427	6.2	336	153–2800	7–2½x13.5	Y	Cla 270V‡	15	Tim S200P	HF2	H	7.84	Tim 35000	Ws4IA	660	952	Var	TO	85⅝	9¼x3 x	T
41	C-25L	.....	185	185	27400	8700▲	10.00/20	10.00/20	Con T-6427	6–4¼x4½	427	6.2	336	153–2800	7–2½x13.5	Y	Cla 270V	5	Tim S200P	HF2	H	7.84	Tim 35000	Ws4IA	660	952	Var	TX	120⅝	9¼x3 x	Tf
42	30A	.....	145▲	145	32000	12000▲	11.00/20	11.00/24	Con R6513	6–4½x5½	513	5.9	400	170–2600	7–3¼x14.5	Y	Spl 6252–53‡	5	TS300–U200	HF2	H	7.84*	Tim 36000	Ws4IA	722	1052	var	TI	67	10x3¼x⅜	T
43	30B	.....	165▲	165	32000	12750▲	11.00/20	11.00/24	Con R6513	6–4½x5½	513	5.9	400	170–2600	7–3¼x14.5	Y	Spl 6252–53‡	5	TS300–U200	HF2	H	–7.84*	Tim 36000	Ws4IA	722	1052	var	TI	87	10x3¼x⅜	T
44	31A	.....	145▲	145	32000	12000▲	11.00/20	11.00/24	Con R6602	6–4½x5½	602	5.9	464	200–2600	7–3¼x14.5	Y	Spl 6252–53‡	5	TS300–U200	HF2	H	–7.84*	Tim 36000	Ws4IA	722	1052	var	TI	67	10x3¼x⅜	T
45	31B	.....	165▲	165	32000	12750▲	11.00/20	11.00/24	Con R6602	6–4½x5½	602	5.9	464	200–2600	7–3¼x14.5	Y	Spl 6252–53‡	5	TS300–U200	HF2	H	–7.84*	Tim 36000	Ws4IA	722	1052	var	TI	87	10x3¼x⅜	T
46	Sterling. . . . HD97	.....	148	175	24000	9150	9.00/20	11.00/20	Wau 6MZA	6–4¼x4¼	404	5.6	290	130–3000	7–2½x12½	Y	Fu 5A43	5	Tim Q100 DPH	FHy	R	5.29–7.80	Tim 35011H	T4IHV	466	822	A	TX	67	9x7x⅛	A
47	HD105	.....	148	175	24000	9550	10.00/20	11.00/22	Wau 6MZA	6–4¼x4¼	404	5.6	290	130–3000	7–2½x12½	Y	Fu 5A43	5	Tim R100 DPH	FHy	R	5.29–7.40	Tim 35011H	T4IHV	524	926	A	TX	67	9x3¼x⅛	A
48	HD115	.....	148	175	32000	10650	10.00/20	11.00/24	Wau 6SRKR	6–4⅝x5½	517	5.5	368	125–2250	7–3x13⅜	Y	Fu 5A62	5	Tim S200P	2F	R	7.77–8.53	Tim 36000 TW	Ws4IA	722	1054	A	TX	67	9x3¼x⅛	A
49	HD145	.....	148	175	36000	11250	11.00/20	12.00/24	Wau 6SRKR	6–4⅝x5½	517	5.5	368	125–2250	7–3x13⅜	Y	Fu 5A62	5	Tim 79721W	2F	R	7.69–11.36	Tim 36000 TW	Ws4IA	614	922	A	TX	67	9¼x3⅝x⅝	A
50	(D) . . . HD115H	.....	158	185	32000	11950	10.00/20	11.00/24	Cum HB600	6–4¼x6	672	17.	500	150–1800	7–4½x16½	Y	Fu 4B86	4	Tim S200P	2F	R	7.77–8.53	Tim 36000 TW	Ws4IA	722	1054	A	TX	68	9x3¼x¼	A
51	(D) . . . HD145H	.....	158	185	36000	12550	11.00/20	12.00/24	Cum HB600	6–4¼x6	672	17.	500	150–1800	7–4½x16½	Y	Fu 4B86	4	Tim 79721W	2F	R	7.69–11.36	Tim 36000 TW	Ws4IA	614	922	A	TX	68	9¼x3⅝x⅝	A
52	HC97	.....	148	175	24000	9200	9.00/20	11.00/20	Wau 6MZA	6–4¼x4¼	404	5.6	290	130–3000	7–2½x12½	Y	Fu 5A43	5	Own 97H	CS	R	6.70–10.82	Tim 35011H	T4IHV	540	842	A	TX	67	9x7x¼	A
53	HC105	.....	148	175	28000	9700	10.00/20	11.00/22	Wau 6MZA	6–4¼x4¼	404	5.6	290	130–3000	7–2½x12½	Y	Fu 5A43‡	15	Own 137H	CS	R	6.70–10.82	Tim 35011H	TL4IHV	540	842	A	TX	67	9x3¼x¼	A
54	HC115	.....	148	175	32000	10350	10.00/20	11.00/24	Wau 8RKR	6–4⅝x5½	517	5.5	368	125–2250	7–3x13⅜	Y	Fu 5A62‡	15	Own 137W	CS	R	6.70–10.82	Tim 36000 TW	Ws4IA	648	974	A	TX	67	9x3¼x¼	A
55	HC144	.....	148	175	36000	11250	10.00/22	12.00/24	Wau 6SRKR	6–4⅝x5½	517	5.5	368	125–2250	7–3x13⅜	Y	Fu 5A62‡	15	Own 148W	CS	R	6.70–10.82	Tim 36000 TW	Ws4IA	708	1042	A	TX	67	9¼x3⅝x⅝	A
56	HC147	.....	148	175	36000	11500	10.00/22	12.00/24	Wau 6SRKR	6–4⅝x5½	517	5.5	368	125–2250	7–3x13⅜	Y	Fu 5A62‡	15	Own 147W	CS	R	6.70–10.82	Tim 36000 TW	Ws4IA	708	1042	A	TX	67	9¼x3⅝x⅝	A
57	HC175	.....	167	185	45000	14600	12.00/24†	14.00/24‡	Wau 145GK	6–5¼x6	779	6.2	585	186–2100	7–3½x17¾	Y	Fu 4B86•	12	Own 175W	CS	R	7.31–12.42	Tim 27454W	Ws4IA	786	1152	A	TX	77	9¼x3⅝x⅝	A
58	HC250	.....	178	190	60000	18400	14.00/24†	14.00/24‡	Wau 145GK	6–5¼x6	779	6.2	585	186–2100	7–3½x17¾	Y	Fu 4B86•	12	Own 251W	CS	R	7.31–12.42	Tim 27454W	Ws4IA	786	1157	A	JX	95	12x3½x⅝	AL
59	(D) . . . HC115H	.....	167	185	32000	12250	10.00/20	11.00/24	Cum HB600	6–4¼x6	672	17.	500	150–1800	7–4½x16½	Y	Fu 4B86•	12	Own 137W	CS	R	6.70–10.82	Tim 36000 TW	Ws4IA	648	974	A	TX	77	9x3¼x¼	A
60	(D) . . . HC175H	.....	167	185	45000	14930	12.00/24†	14.00/24‡	Cum HBD600	6–4¼x6	672	17.	500	150–1800	7–4½x16½	Y	Fu 4B86•	12	Own 175W	CS	R	7.31–12.42	Tim 27454W	Ws4IA	786	1152	A	TX	77	9¼x3⅝x⅝	A
61	(D) . . . HC250H	.....	178	190	60000	18700	14.00/24†	14.00/24‡	Cum HBD600	6–4¼x6	672	17.	500	150–1800	7–4½x16½	Y	Fu 4B86•	12	Own 251W	CS	R	7.31–12.42	Tim 27454W	Ws4IA	786	1152	A	JX	95	12x3½x⅝	AL
62	Studebaker . . . M5	.....	113	113	4500	2120	6.50/16S	6.50/16S	Own 1M	6–3x4	170	6.5	134	80–4000	4–2 x5	N	Own 664949	3	Own 663597	Hy	H	** –4.82	Own 664307	L4IH	157	276	Co	2I	45⅜	7 x2 x	T
63	M15A-20	.....	120	120	7800	2960	7.00/17S	7.50/17	Own 2M	6–3x4	170	6.5	134	80–4000	4–2 x5	N	Own 673674	4	Own 664435	SF	H	5.66–6.60	Own 676461	LH4IH	216	342	a	TX	52⅜	7 x2 x	T
64	M15A-28	.....	128	128	10000	3060	7.50/17S	7.00/20	Own 2M	6–3x4	170	6.5	134	80–4000	4–2 x5	N	Own 673674	4	Own 665174	SF	H	6.60–5.66	Own 676461	LH4IH	216	342	a	TX	60⅜	8 x2 x	T
65	M16	.....	128	195	13500	3630	7.00/20D	8.25/20	Own 3M	6–3 x4½	226	6.5	176	94–3600	4–2½x5	N	Own 674989	4	Own 665171	SF	H	5.66–6.66	Own 664452	LH4IH	280	442	Co	TX	60⅜	8½x2 x	T
66	M16(2–Sp)	.....	128	195	15000	3955	7.00/20D	8.25/20	Own 3M	6–3 x4½	226	6.5	176	94–3600	4–2½x5	N	Own 676055	HyF	H	6.13–8.10	Own 664452	LH4IH	280	442	Co	TX	60⅜	8½x2 x	T
67	Truckstell(C) F18-5	.....	140	194	18500	♣5365	7.50/20•	9.00/20	Ford	8–3 x3¾	239	6.4	180	100–3800	3–2½x4.71	N	Ford & BL	12	Cla R1250	SF	H	5.67–6.83	Ford	L4IHV	390	600	a	TX	65¾	7½x3x .47	CTf
68	(C) F19-5-0	.....	108	166	19500	♣5615	7.50/20•	9.00/20	Ford	8–3 x3¾	239	6.7	180	100–3800	3–2½x4.71	N	Ford & BL	12	Cla R1250	SF	H	5.67–6.83	Ford	L4IHV	390	600	a	TX	65¾	7½x3x .47	CTf
69	(C) C18-5	.....	147	195	18500	♣5530	7.50/20•	9.00/20	Chevrolet	6–3 x3¾	235	6.6	192	93–3100	4–2¾x5	N	Chev & BL	12	Cla R1250	SF	H	5.67–6.83	Chevrolet	L4IHV	399	600	a	TX	70	9¾x3x .50	CTf
70	(C) C19-5-0	.....	120	180	19500	♣5700	7.50/20•	9.00/20	Chevrolet	6–3 x3¾	235	6.6	192	93–3100	4–2¾x5	N	Chev & BL	12	Cla R1250	SF	H	5.67–6.83	Chevrolet	L4IHV	399	600	a	TX	70	9¾x3x .50	CTf
71	Ward La Fr. . D-1A	5340	149	220	25000	9500	10.00/20	11.00/20	Con B6427	6–4¼x4½	427	5.1	325	127–2600	7–2½x13½	Y	Ful 5A430	5	Tim 58415PA	B	R	**–6.1	Tim 35011TW	Ws4A	600	928	C	TM	68¼	9¼x3x¼	....
72	D-1B	6500	149	220	25000	9500	10.00/20	11.00/20	Con 22R	6–4¼x5½	501	5.4	384	148–2400	7–2¾x14½	Y	Ful 5A620	5	Tim Q-100	B	R	**–6.83	Tim 35011TW	Ws4A	600	928	C	TM	68¼	9¼x3x¼	....
73	D-1C	6000	162	220	29000	9500	11.00/20	11.00/22	Con B6427	6–4¼x5½	427	5.1	325	127–2600	7–2¼x13½	Y	Ful 5A430	5	Tim S-200P	S2	R	**–7.84	Tim 35011TW	Ws4A	673	1031	C	TM	68¼	9¼x3x¼	....
74	D-2K	7400	149	220	29000	10000	11.00/20	11.00/22	Wau 140GK	6–4½x5½	525	6.4	425	168–2400	7–2¾x13	Y	Ful 5A620	5	Tim S-200P	S2	R	**–7.84	Tim 35011TW	Ws4A	673	1031	C	TM	68¼	10x3½x⅞	....

(Turn to Page 86, Please)

▲ Includes Cab.
‡ Rear only: Front 11.00/24. Front only: Rear 8.25/20.
† Rear only: Front 12.00/24.
‡ 6231A Spicer Auxiliary Transmission.
§ Auxiliary transmission, Own OJ.
♦ Auxiliary transmission Own FJ.
♣ 5031 F-G Spicer Transmission.
• 2-Speed Axle Available.
▼—Lockheed Type Front and Timken Dual Primary Rear Brakes.
▲ Special W.B.'s available on request.
■ 6231 Spicer Auxiliary Transmission.
‡ 8200 for 8.25/18 tires.



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U. S. Patents 2017629, 2263510, 2263511
U. S. and Foreign Patents and Patents Pending

Distributors and Builders in All Parts of the Country

(Continued from Page 84)

Line Number	MAKE AND MODEL	Chassis List Price	WHEEL-BASE Minimum Standard	WHEEL-BASE Maximum Standard	Gross Vehicle Weight for Normal Service	Chassis Weight (See definition)	TIRE SIZES D-dual rear S-single rear: Standard Front and Rear	TIRE SIZES: Maximum Authorized Tire Size (Duals unless noted)	ENGINE DETAILS: Make and Model	No. of Cylinders, Bore and Stroke	Displacement	Comp. Ratio	Torque lb. ft.	Max. Brake H.P. at R.P.M. Given	Main Bearings: Number, Diameter and Length	Governor Standard	TRANSMISSION: Make and Model	Forward Sp'ds	REAR AXLE: Make and Model	Gear and Type	Drive & Torque	Gear Ratio Range in High	FRONT AXLE: Make and Model	BRAKES SERVICE: Make Location Type Operat'n	Lining Area	Drum Area	Drum Material	Hand Location Type	C-A Dimension (Min. Std. W. B.)	FRAME: Side Rail Dimensions	Type
	Ward La Fr.																														
1	Cont'd.....D-2Z	7550	149	220	29000	10000	11.00/20	11.00/20	Wau 140GZ	6–4½x5½	554	6.4	456	184–2400	7–3¼x13¾	Y	Ful 5A650	5	Tim S-200P	S2	R	**-7.84	Tim 35011TW	Ws4A	673	1031	C	TM	68¼	10x3½x⅄	
2	.....D-2B	7285	162	220	29000	10000	11.00/20	11.00/22	Con 22R	6–4½x5¼	501	5.4	384	148–2400	7–3¼x14½	Y	Ful 5A620	5	Tim S-200P	B	R	**-7.84	Tim 35011TW	Ws4B	673	1031	C	TM	68¼	10x3½x⅄	
3	.....D-3	7900	149	220	29000	10000	11.00/20	11.00/22	Con R6572	6–4¾x5⅝	572	5.9	440	189–2600	7–3¼x14½	Y	Ful 5A650	5	Tim S-200P	S2	R	**-7.84	Tim 35011TW	Ws4B	673	1031	C	TM	68¼	10x3½x⅄	
4	.....D-3S	8050	149	220	29000	10000	11.00/20	11.00/22	Con R6602	6–4½x5⅝	602	5.9	463	198–2600	7–3¼x14½	Y	Ful 5A650	5	Tim S-200P	S2	R	**-7.84	Tim 35011TW	Ws4B	673	1031	C	TM	68¼	10x3½x⅄	
5	.....D-5	10300	149	220	35000	12500	11.00/22	11.00/24	Cum HB600	6–4¾x6	672	17	500	150–1800	7–4½x16¾	Y	Ful 5A650	5	Tim U-200	S2	R	**-6.42	Tim 27454	Ws4B	681	1041	C	TM	68¼	10x3½x⅄	
6	Willys (Sd.Del.)463	1285*	104	104	4000	*2752	6.50/158	.....	Own 463	4–3⅛x4⅜	134	6.5	105	63–4000	3–2.33xo.48	N	WG T96	3	Spi 23–1	Hy½	H	4.88–5.38	Own I Tr	B4IH	133	220	a	2I	.....	5x2¼x.063	TfD
7	Willys.....2WD	1189▲	118	118	5300	▲2788	6.50/168	7.00/168	Own 2WD	4–3⅛x4⅜	134	6.5	105	60–4000	3–2.33x5.48	N	WG T90E	3	Tim51540NX2	S½	H	5.38–6.17	Cla F-154	B4IH	176	276	a	2I	42.28	5½x2x⅄	TD
	Four-Wheel-Drive																														
8	Corbitt.....22FG	.....	159	Opt	22000	.....	9.00/20	10.00/20	Con B6371	6–4¼x4½	371	6.0	280	100–2600	7–2¾x13½	Y	Fu 5A43	5	Tim R2090H	2F	H	** –8.43	Tim F2090H	L4IHV	....	868	a	TD	74	9x3x¼	DL
9	Dodge.....WDX	.....	126	126	8700	.....	7.50/168	9.00/168	Own T-137	6–3¾x4½	230	6.7	185	94–3200	4–2½x4.8	Y	NP 38580	4	Own T137	HyF	H	4.89–5.83	Own T137	O4IH	210	311	Co	TX	52H	6½x2⅄x⅄	T
10	FWD.....HA	.....	132	156	17000	▲7470	8.25/20D	10.00/20	Wau BZ	6–4x4¼	320	5.9	237	104–3000	7–2⅝x10¼	Y	Own H	5	Own H	SF	H	6.6 –9.06	Own H	L4IHV	391	807	a	T4	79½	9x3x¼	T
11	.....HR	.....	132	154	20000	▲8000	9.00/20	10.00/20	Wau MZA	6–4¼x4¾	404	5.6	291	129–2800	7–2⅝x12⅝	Y	Own H	5	Own H	SF	H	6.6 –9.06	Own H	L4IHV	391	807	a	T4	79½	9x3x¼	T
12	.....HG	.....	154	154	20000	▲8050	9.00/20	10.00/20	Wau MZA	6–4¼x4¾	404	5.6	291	129–2800	7–2⅝x12⅝	Y	Own H	5	Own H	SF	H	6.6 –9.06	Own H	L4IHV	391	807	a	T4	89¾	7⅄x3x⅓	C
13	.....SU‡	.....	150	182	28000	▲10570	11.00/20D	11.00/20	Wau 8RKR	6–4⅝x5½	517	5.5	365	126–2400	7–3x13½	Y	Own U	5	Own U	BF	H	6.7 –9.8	Own U	L4IHV	512	867	a	T4	90	8⅄x3x⅓	C
14	.....M7	.....	150	180	38600	▲15500	12.00/20D	12.00/20	Wau 145GK	6–5¼x6	779	6.2	585	186–2000	7–3½x17¾	Y	Own M	10	Tim 1758	2F	H	** –7.33	Wis F409	Ws4IA	578	976	a	T4	90	10⅄x3x⅓	C
15	(D).....M7D	.....	150	180	38600	▲15700	12.00/20D	12.00/20	Bu DC844	6–5¼x6½	844	...	605	180–1800	7–3¾x17	Y	Own M	10	Tim 1758	2F	H	** –7.33	Wis F409	Ws4IA	578	976	a	T4	90	10⅄x3x⅓	C
16	(D).....M10D	.....	150	180	44000	▲16400	11.00/24D	12.00/24	Bu DC844	6–5¼x6½	844	...	605	180–1800	7–3¾x17	Y	Own M	10	Tim 79721	2F	H	** –7.7	Wis F409	Ws4IA	614	1030	a	T4	90	10⅄x3x⅓	C
17	Marmon-MH440-4	.....	158	170	22500	▲8700	9.00/20D	10.00/20	Her WXLC3	6–4¼x4¾	404	5.4	293	118–2800	7–2⅝x13¾	Y	Fu 5A430	5	Tim R2090W	2B	H	** –8.43	Tim F2090W	W.....A	584	887	c	F	72	9⅄x3x¼	T
18	Herr...MH555-4	.....	161	173	28000	▲10200	10.00/20D	11.00/20	Her RXC	6–4⅝x5¼	529	6.3	390	131–2200	7–3x13¾	Y	Fu 5A620	5	Tim R3100W	2B	H	** –8.15	Tim F3100W	W.....A	692	1039	c	F	72	10⅄x3x⅛	T
19	(C).....CM5-4	.....	134	134	13500	▲4847	7.50/20D	7.50/20	Ford	8–3⅄x3¾	239	6.4	180	100–3800	3–2½x4.71	N	Ford	4	Ford	S	H	** –6.67	Own M5	F.....H	303	563	a	F	60⅄	7x2¼x⅄	T
20	(C).....CM6-4	.....	158	158	13500	▲4973	7.50/20D	7.50/20	Ford	8–3⅄x3¾	239	6.4	180	100–3800	3–2½x4.71	N	Ford	4	Ford	S	H	** –6.67	Own M5	F.....H	303	563	a	F	84⅄	7x2¾x⅄	T
21	(C).....LD6P-4	.....	114	.....	.....	.....	15▼	15▼	Ford	8–3⅄x3¾	239	6.4	180	100–3800	3–2½x4.71	N	Ford	4	Ford	S	T	** –4.11	Own O	F.....H	162	.....	A	F	.....	.....	N
22	(C).....LD6-4	.....	114	.....	4700	▲2719	15▼	15▼	Ford	8–3⅄x3¾	239	6.4	180	100–3800	3–2½x4.71	N	Ford	4	Ford	S	H	** –4.11	Own O	F.....H	162	.....	A	F	40⅄	5½x2¼x⅄	T
23	(C).....OT5-4	.....	122	....	6800	▲4500	7.50/17	7.50/17	Ford	8–3⅄x3¾	239	6.4	180	100–3800	3–2½x4.71	N	Ford	4	Ford	S	H	** –4.86	Own I	F.....H	186	.....	A	F	48	6x2¼x⅄	T
24	Oshkosh....W-312	.....	149	204	25000	10200	10.00/20	11.00/20	Her WXLO3	6–4¼x4¾	404	6.3	312	139–2500	7–2¾x13¾	Y	Fu 5A43	5	Own W312	SF	H	** –7.8	Own W312	L4II	560	867	G	TX	82	8¼x3x⅝	TF
25	.....W1700	.....	150	205	28000	11000	11.00/20D	12.00/20S	Her RXC	6–4⅝x5¼	529	5.4	395	131–2200	7–3x13¾	Y	Fu 5A620	5	Own W1700	SF	H	** –6.4	Own 1700	L4IH	630	975	G	TX	82	8¼x3x⅝	TF
26	.....W-700	.....	150	204	30000	▲12000	11.00/20	12.00/20S	Her RXCO	6–4⅝x5¼	529	5.4	395	131–2200	7–3x12¾	Y	Fu 5A620	10	Own W700	2F	H	** –6.6	Own W700	L4IH	630	975	G	TX	82	10¼x3x⅜	TF
27	.....W-703	.....	150	204	30000	▲12200	11.00/20	12.00/20S	Her RXLD	6–4¾x5¼	558	5.4	430	150–2200	7–3½x13¼	Y	Fu 5A620	10	Own W700	2F	H	** –6.6	Own W700	L4IH	630	975	G	TX	82	10¼x3x⅜	TF
28	(D).....W-906	.....	158	190	38000	▲15600	12.00/20	14.00/20S	Cum HB600	6–4¾x6	672	...	500	150–1800	7–4½x16	Y	Fu 4A86	12	Own W906	2F	H	** –6.2	Own W906	LT4IWS	645	975	G	TX	90	10¼x3⅄x¼	TF
29	.....W2200	.....	160	181	40000	16500	13.00/20D	14.00/20S	Bu MO779	6–5¼x6	779	...	575	188–2100	7–3¾x17	Y	Fu 4A86	12	Own W2200	2F	H	** –6.14	Own 2200	LT4IA	645	975	G	TX	90	10¼x3½x⅝	TF
30	.....W2201	.....	160	181	40000	16500	13.00/20D	14.00/20S	Bu MO893	6–5¾x6	893	...	625	200–1800	7–3¾x17	Y	Fu 4A86	12	Own W2200	2F	H	** –6.14	Own 2200	LT4IA	645	975	G	TX	90	10¼x3½x⅝	TF
31	(D).....W2204	.....	160	181	46000	18500	13.00/20D	14.00/24	Bu 6DC844	6–5¼x6	844	...	605	180–1800	7–3½x17	Y	Fu 4A86	12	Own W2204	2F	H	** –6.4	Own 2204	LT4IA	740	1190	G	TX	90	10¼x3½x⅝	TF
32	Peterbilt(D)270DD	.....	165	Opt	27000	12500	10.00/20D	11.00/22	Cum HB600	6–4⅞x6	672	17	500	150–1800	7–4½x16½	Y	Spi 7741	12	U-200P	2F	R	** –6.42	Tim 36000W	Ws4IA	800	1250	a	FD	80½	10⅝x3⅛x⅄	TL
33	Sterling....DD115	.....	160	178	32000	11500	10.00/20	11.00/24	Wau 6SRKR	6–4½x5¼	517	5.5	368	125–2250	7–3x13¾	Y	Fu 5A62†	10	Tim 1357W	2F	R	6.65–8.6	Tim F3110W	Ws4IA	644	984	A	TX	76	9x3¼x¼	A
34	(D)....DD145H	.....	167	185	36000	13900	11.00/20	12.00/24	Cum HB600	6–4¾x6	672	17	500	150–1800	7–4½x16½	Y	Fu 4B86‡	10	Tim 1758W	2F	R	7.33–10.3	Tim F409CW	Ws4IA	644	984	A	TX	77	9¼x3⅝x⅝	A
35	Walter(e.f.)....FN	.....	126	150	20000	7500	9.00/20D	10.00/20S	Wau MZA	6–4¼x4¾	404	5.6	290	125–2600	7–2⅝x12½	Y	Own FN	6	Own FNB	2	H	6.0–8.0	Own FN	O4IA	470	670	G	FI	84	7x2¾x¼	C
36	(e.f.)...FZM	.....	126	150	24000	8500	10.00/20D	12.00/20S	Wau MZA	6–4¼x4¾	404	5.6	290	125–2600	7–2⅝x12½	Y	Own FN	6	Own FMB	2	H	6.0–8.0	Own FJ	O4IA	470	670	G	FI	84	12x3½x⅜	B
37	(e.f.)...FCK	.....	126	138	30000	10500	10.00/24D	11.00/24S	Wau 8RKR	6–4⅝x5¼	517	5.5	365	125–2200	7–3x13¾	Y	Own FC	6	Own FCB	2	H	7.5–9.0	Own FC	O4IA	585	890	D	FI	84	13x3¾x⅜	B
38	(e.f.)....FC	.....	138	162	32000	11000	11.00/24D	12.00/24S	Wau 8RKR	6–4⅝x5¼	517	5.5	365	125–2200	7–3x13¾	Y	Own FC	6	Own FCB	2	H	7.5–9.0	Own FCR	O4IA	585	890	D	FI	96	14x3¾x⅜	B
39	(e.f.)...FGB	.....	126	162	32000	12000	11.00/24D	12.00/24S	Wau 145GK	6–5¼x6	779	5.7	580	185–2000	7–3½x17¾	Y	Own FA	6	Own FCB	2	H	7.5–9.0	Own FCR	O4IA	585	890	D	FI	84	14x3¾x⅜	B
40	(e.f.)...FGR	.....	126	162	42000	13000	12.00/24D	12.00/24	Wau 145GK	6–5¼x6	779	5.7	580	185–2000	7–3½x17¾	Y	Own FA	6	Own FCR	2	H	7.5–9.0	Own FCR	O4IA	585	890	D	FI	89	14x3¾x⅜	B
	Willys																														
41	Univ. Jp...CJ-2A	*1146	80	80	3500	*2169	6.00/16	7.00/15	Own CJ-2A	4–3⅛x4⅛	134	6.5	105	60–4000	3–2.33x5.48	N	WG T90A	6*	Spi 41-2	Hy½	H	** –5.38	Spi 25	B4IH	118	198	a	F		4x1¼x⅄	P
42	.....4WD	▲1495	118	118	5300	▲2920	7.00/16	.....	Own 4WD	4–3⅛x4⅛	134	6.5	105	60–4000	3–2.33x5.48	Y	WGT90A	6*	Tm 51540NXZ	S½	H	** –5.38	Spi 25	B4IH	176	276	a	2I	42.28	5½x2x⅄	TD
	Six-Wheelers																														
	Wheels ▼ Driven																														
43	Federal....663MA	.....	189	225	40000	14500	10.00/20	10.00/22	Con R6602	6–4½x5⅝	602	6.1	464	200–2600	7–3¼x14½	Y	Fu 5A65▼	15	T SW3012P	WF	R	** –6.16	Tim 36000TW	Ws6IA	1082	1569	a	TD	108	10¼x3⅄x⅄	T
44	.....664MAB	.....	189	225	55000	15850	11.00/22	12.00/20	Con R6602	6–4½x5⅝	602	6.1	464	200–2600	7–3¼x14½	Y	Spi 7741▼	12	Tim SW456P	WF	R	** –7.6	Tim 27452W	Ws6IA	1308	1888	a	TD	108	10¼x3⅄x⅄	T
45	.....664MA	.....	189	225	55000	1o950	11.00/22	12.00/20	Con R6602	6–4½x5⅝	602	6.1	464	200–2600	7–3¼x14½	Y	Spi 7741▼	12	Tim SD462P	BR	R	** –8.15	Tim 27452W	Ws6IA	1092	1624	a	TD	108	10¼x3⅄x⅄	T
46	F.W.D.....M6x6	.....	243	276	58000	▲21400	11.00/24D	11.00/24	Wau 145GK	6–5¼x6	779	6.2	585	186–2000	7–3½x17¾	Y	Fu 5A920	10	Wis SD462	2F	L	** –10.6	Wis F409	Ws6IA	1080	1680	a	T6	183	10⅄x3x⅓	P
47	(D)....M6X6D	.....	180	276	58000	▲21600	11.00/24D	11.00/24	Bu DC844	6–5¼x6½	844	...	605	180–1800	7–3¾x17	Y	Fu 5A920	10	Wis SD462	2F	L	** –10.6	Wis F409	Ws6IA	1080	1680	a	T6	216	10⅄x3x⅓	P
48	International (2)																														
49	.....KB-6F.4R	3100	151	194	22000	6915	7.00/20D	8.25/20	Own BLD250	6–3⅞x4½	251	6.3	200	100–3200	4–2⅝x5⅜	N	Own F51	5	Own RF1450	8F	H	6.16–6.66	Own F470	LH4IHV	495	869	c	PX	77	8⅄x⅄x⅄	T
50	.....KB-8F.4R	4700	161	215	27000	8575	8.25/20D	9.00/20	Own RED361	6–4¼x4½	361	6.3	282	126–3000	7–3¼x10⅜	Y	Own F52	5	Own RF1560	8F	H	6.50–7.16	Own F550	LH6IHV	644	1105	c	PX	84	9¼x3⅄x⅄x⅓	T
51	.....KB-11F.4R	7125	161	215	37000	10830	9.00/20D	10.00/20	Own RED450	6–4⅝x5	451	6.3	360	148–2600	7–3¼x10⅜	Y	Own F54	5	Own RF1670	8F	H	** –7.16	Own F760	TW6IA	738	1179	G	PX	84	10⅄x3⅄x⅄x⅓	T
52	.....W4064H	12600	203	239	40000	15750	10.00/22	11.00/22	Con S6749	6–5¾x5½	749	6.0	554	254–2600	7–3¾x.....	Y	Spi 7741	4	Tim SW3012	WF	L	4.71–6.16	Own S6303	BW4IA	876	.....	.....	FX	108	10x3½x⅄	C
53	.....W4564OH	13200	206	242	45000	17160	10.00/22	11.00/22	Con S6749	6–5¾x5½	749	6.0	554	254–2600	7–3¾x.....	Y	Spi 7741	4	Tim SW456	WF	H	6.00–7.6	Own S6303	BW4IA	1020	.....	.....	FX	108	10x3½x⅄	C
54	.....W6564OH	15700	206	284	65000	.....	11.00/24	12.00/24	Con S6749	6–5¾x5½	749	6.0	554	254–2600	7–3¾x.....	Y	Spi 7741	4	Tim SD466	2F	H	8.15–11.66	Own S6303	BW4IA	.....	.....	.....	FX	160	10x3½x⅄	C
	Kenworth																														
55	.....(D).....522	.....	187	245	43000	12900	10.00/20	11.00/22	Cum HB6	6–4¼x6	672	17	500	150–1800	7–4½x16½	Y	BL 7841	4	Tim U200P&●				Tim 36000TW	Ws4IA	1135	.....	.....	.....	.....	.....	9½x3¼x⅄	...
56	.....(D)523.4R	.....	193	241	41000	14600	10.00/20	11.00/22	Cum HB6	6–4¼x6	672	17	500	150–1800	7–4½x16½	Y	BL 7841	4	Ti SW3012PA	WF	R	** –6.16	Tim 36000	Ws4rIA	924	1248	a	TD	102	9½x3¼x⅄	C
57	.....(D)524.4R	.....	193	241	54000	15100	10.00/20	11.00/22	Cum HB6	6–4¼x6	672	17	500	150–1800	7–4½x16½	Y	BL 7841	4	Tim SW452	WF	R	6.0 –7.6	Tim 36000	Ws4rIA	819	1192	a	TD	102	9½x3¼x⅄	C
58	.....528.4R	.....	186	234	40000	12500	10.00/20	10.00/22	Bud LO525	6–4½x5½	525	5.5	385	150–2200	7–3x11½	Y	Fu 5A620	5	Ti SW3012PA	WF	R	** –6.16	Tim 35100	Ws4rIA	924	1248	a	TD	102	9½x3¼x⅄	C
59	.....(D)548.4R	.....	193	241	54000	17000	11.00/22	12.00/24	Cum HB6	6–4¼x6	672	17	500	150–2200	7–4½x16½	Y	BL 7841	4	Tim SD462	DR	R	** –8.15	Tim 36000	Ws4rIA	819	1192	a	TD	109	9½x3¼x⅄	dbC
60	.....(D)552.4R	.....	255	255	54000	20700	13.00/24	13.00/24	Cum HB6	6–4¼x6	672	17	500	150–1800	7–4½x16½	Y	BL 7841	4	Tim SD462W	WF	R	** –8.15	Tim F3200W	Ws4rIA	1109	1192	a	TD	168	9½x3¼x⅄	dbC
61	(D).....825	.....	193	241	42000	14900	10.00/20	11.00/22	Cum HB6	6–4¼x6	672	17	500	150–1800	7–4½x16½	Y	BL7841	4	TGSW458P	WF		6.0–7.6	Tim 36000	Ws4rIA	1016	....	a	TD	102	9½x3¼x⅄	C
62	829	.....	186	234	42000	14650	10.00/20	11.00/22	Bud LO525	6–4½x5½	525	5.5	385	150–2200	7–3x11½	Y	Fw5A620	5	TSD3010P	DR	R	** –8.27	Tim 36000	Ws4rIA	924	.....	a	TD	104	9½x3¼x⅄	...

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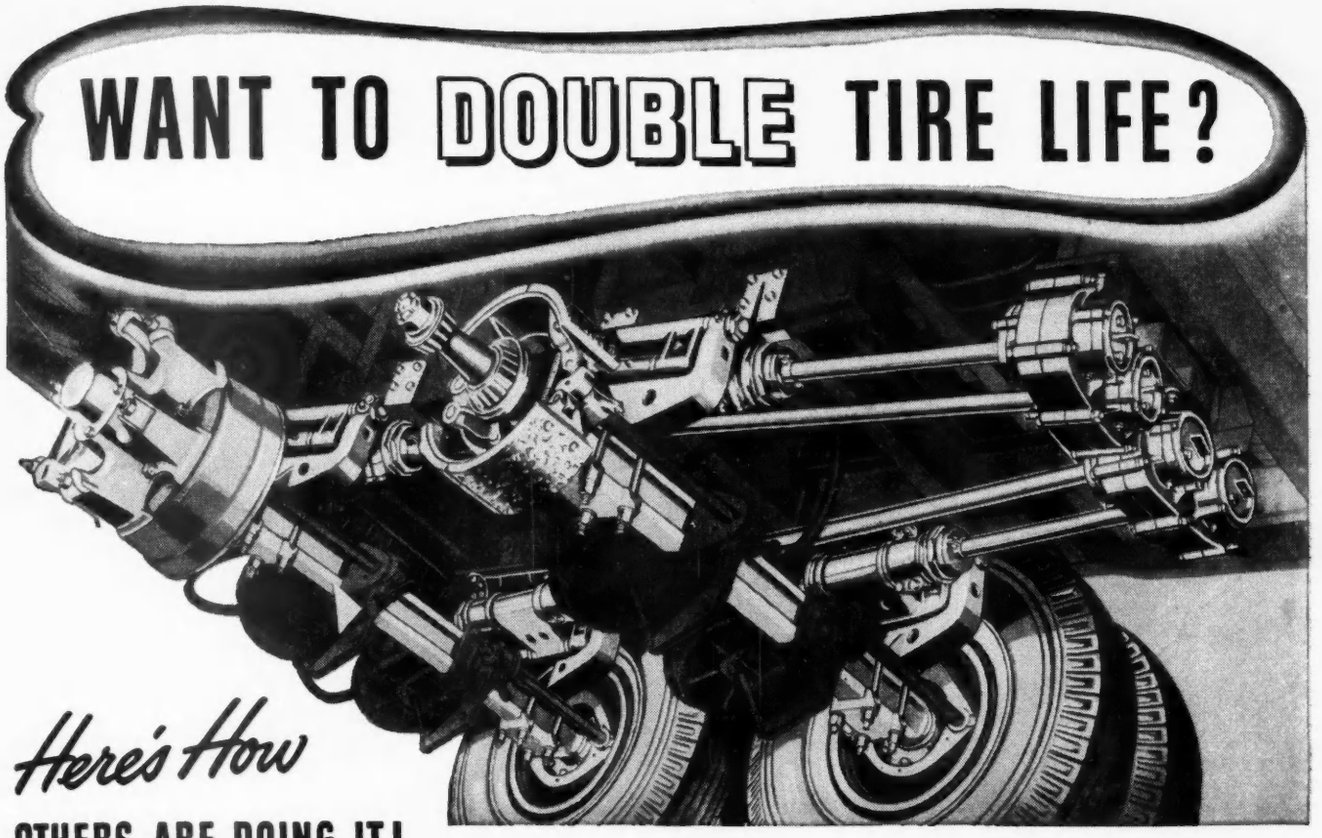
▲ Includes Cab. ▼ Auxiliary transmission Spicer 703F with 3 forward speeds. * Complete vehicle. † Timken T76—2 speed transfer case.
‡ Timken T77—2 speed transfer case. * Three speed transmission—2 speed transfer case. ● Timken T13126PA Trailing Axle.

WANT TO DOUBLE TIRE LIFE?



Here's How

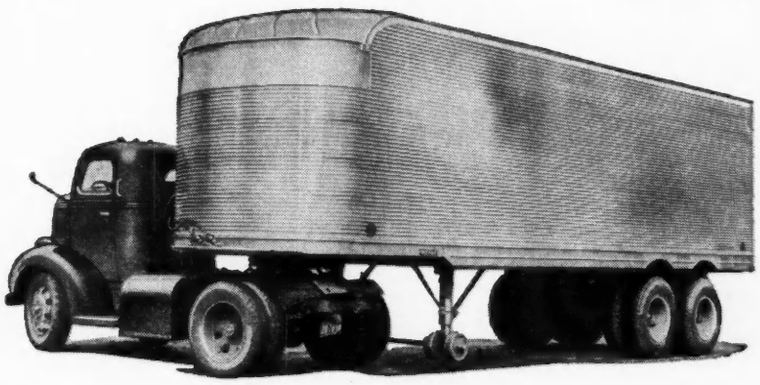
OTHERS ARE DOING IT!

★ **Note how Torsion-Bar Springs replace conventional leaf springs and hangers. Torsion-Bar Springs do not "bottom." This patented construction—a Fruehauf exclusive—permits axles to "toe-in" automatically on curves. The unit trails perfectly, without scuffing tires.**

OPERATORS' RECORDS indicate without question that Fruehauf Gravity Suspension Tandems are at least doubling tire life.

If you are a fleet owner, the savings in tires alone are tremendous. For example: a set of eight 11.00 x 20 tires probably costs you $766.00. If instead of changing tires at 40,000 miles, they roll up 80,000, 120,000 or even 222,000 as one western user reported, it's a matter of simple arithmetic to figure the savings in rubber from this revolutionary Trailer underconstruction.

And, savings multiply still further when you consider such features as *easy pulling* that lowers fuel cost. Drivers report they operate their tractors one gear higher with Gravity Suspension. *Lower maintenance cost,* too, is assured from the cushioned ride it provides both Trailer and load. Safety likewise represents a big saving . . . Gravity Tandems hug the road on curves. Brake chatter and wheel hop are eliminated . . . stops are positive with this mechanism.



As one driver-owner states, "The only way to make money in the trucking business today is to buy the *best* and for my money it's Fruehauf Gravity Suspension in combination with Stainless Steel Vans. And, speaking about tires, this one set has more than 80,000 miles on it with many more thousand yet to go."

World's Largest Builders of Truck-Trailers

FRUEHAUF TRAILER COMPANY • DETROIT 32

70 Factory Service Branches

FRUEHAUF TRAILERS "ENGINEERED TRANSPORTATION"

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(Continued from Page 86)

Line Number	MAKE AND MODEL	Chassis List Price	WHEEL-BASE Minimum Standard	WHEEL-BASE Maximum Standard	Gross Vehicle Weight for Normal Service	Chassis Weight (See definition)	TIRE SIZES D-dual rear S-single rear Standard Front and Rear	TIRE SIZES Maximum Authorized Tire Size (Duals unless noted)	ENGINE DETAILS Make and Model	No. of Cylinders, Bore and Stroke	Displacement	Comp. Ratio	Torque lb. ft.	Max. Brake H.P. at R.P.M. Given	Main Bearings Number, Diameter and Length	Governor Standard	TRANSMISSION Make and Model	Forward Sp'ds	REAR AXLE Make and Model	REAR AXLE Gear and Type	REAR AXLE Drive & Torque	REAR AXLE Gear Ratio Range in High	FRONT AXLE Make and Model	BRAKES SERVICE Make Location Type Operat'n	BRAKES SERVICE Lining Area	BRAKES SERVICE Drum Area	BRAKES SERVICE Drum Material	BRAKES Hand Location Type	C-A Dimension (Min. Std. W. B.)	FRAME Side Rail Dimensions	FRAME Type
	Marmon-Herr.																														
1	(C).....CM5-6	2790	156	....	22500	▲6673	7.50/20D	7.50/20	Ford	8-3 7/8x3 3/4	239	6.4	180	100-3800	3-2 1/2x4.71	N	Ford	4	Timken	S	H	** -6.67	Own M5	M	503	....	a	F	82 1/2	7 1/2x3x1 1/4	C
2	(C).....CM6-6	2822	180	....	22500	▲6710	7.50/20D	7.50/20	Ford	8-3 7/8x3 3/4	239	6.4	180	100-3800	3-2 1/2x4.71	N	Ford	4	Timken	S	H	** -6.67	Own M5	M	503	....	a	F	106 1/4	7 1/2x3x1 1/4	C
3	.....MH440-6	.....	182	....	34000	▲10600	9.00/20	10.00/20	Her WXLC3	6-4 1/4x4 3/4	404	5.4	239	118-2800	7-2 5/8x13 1/4	Y	Fu 5A430	5	Tim SFD154	2B	H	** -8.43	Tim F2090W	Ws..A	876	....	C	F	96	9 1/4x3x1 1/4	CT
4	.....MH-555-6	.....	182	....	42000	▲14900	11.00/20	11.00/20	Her RXC	6-4 5/8x5 1/4	529	6.3	390	131-2200	7-3x13 1/4	Y	Fu 5A620	5	Tim SD3000	2B	H	** -8.15	Tim F3200W	Ws..A	1092	1608	...	F	93	10 1/2x3x1 1/2	T
	Oshkosh																														
5	.....W703-6X6	.....	Opt	Opt	47000	16950	11.00/20D	12.00/20	Her RXLD	6-4 1/2x5 1/4	558	5.4	450	150-2200	7-3 1/2x13 1/4	Y	Fu 5A650	12	Tim SD454W	2F	H	** -6.31	Own-Tim	L6IH	1080	1625	G	TX	Opt	10 1/4-3 1/4-5/8	B
6	(D)...W1600BD	.....	245	Opt	60000	22770	11.00/24D	12.00/24	Bu 6DC844	6-5 1/4x6 1/2	844	...	600	180-1800	7-3 1/4x17	Y	Fu 4BI86	12	Tim SD462	2F	H	** -6.14	Own-Tim	LT61A	1080	1625	G	TX	160	12 3/4-3 1/2-5/8	B
7	(D)‡W1600BDH	.....	267	Opt	60000	24300‡	11.00/24D	12.00/24	Bu 6DC844	6-5 1/4x6 1/2	844	...	600	180-1800	7-3 1/4x17	Y	Fu 4BI86	12	Tim SD462	2F	H	** -9.82	Own-Tim	LT61A	1080	1625	G	TX	174	12 3/4-3 1/2-5/8	B
8	(D)‡W1602BDH	.....	272	Opt	95000	29300	14.00/24D	14.00/24	Bu 6DC844	6-5 1/4x6 1/2	844	...	600	180-1800	7-3 1/4x17	Y	Fu 4BI86	12	Tim SD472	2F	H	** -13.9	Own-Tim	LT61A	....	2217	G	TX	177	12 3/4-3 1/2-5/8	B
9	.....W1600BG	.....	245	Opt	60000	22770	11.00/24D	12.00/24	Bu MO893	6-5 1/2x6	893	...	625	200-1800	7-3 1/4x17	Y	Fu 4BI86	12	Tim SD462	2F	H	** -9.82	Own-Tim	LT61A	1080	1625	G	TX	160	12 3/4-3 1/2-5/8	B
10	(D)...W1600CD	.....	259	Opt	60000	23400‡	11.00/24D	12.00/24	Cum 6HBI	6-4 1/2x6	672	...	500	150-1800	7-4 1/2x16	Y	Fu 4BI86	12	Tim SD462	2F	H	** -6.14	Own-Tim	LT61A	1080	1625	G	TX	174	12 3/4-3 1/2-5/8	B
11	(D)...W1600CDS	.....	259	Opt	60000	23700‡	11.00/24D	12.00/24	Cum 6HBIS	6-4 1/2x6	672	...	635	200-1800	7-4 1/2x16	Y	Fu 4BI86	12	Tim SD462	2F	H	** -9.82	Own-Tim	LT61A	1080	1625	G	TX	174	12 3/4-3 1/2-5/8	B
12	(D)..‡W1600CDH	.....	265	Opt	60000	24000‡	11.00/24D	12.00/24	Cum 6HBI	6-4 1/2x6	672	...	500	150-1800	7-4 1/2x16	Y	Fu 4BI86	12	Tim SD462	2F	H	** -9.82	Own-Tim	LT61A	1080	1625	G	TX	172	12 3/4-3 1/2-5/8	B
13	(D)..‡W1600CDSH	.....	267	Opt	60000	24300‡	11.00/24D	12.00/24	Cum 6HBIS	6-4 1/2x6	672	...	635	200-1800	7-4 1/2x16	Y	Fu 4BI86	12	Tim SD462	2F	H	** -6.14	Own-Tim	LT61A	1080	1625	G	TX	174	12 3/4-3 1/2-5/8	B
14	**Peterbilt(D)344DT**	.....	189	Opt	43000	16250	10.00/20D	11.00/22	Cum HB600	6-4 1/2x6	672	17.	500	150-1800	7-4 1/2x16 1/2	Y	Spl 7741	12	Tim SW3012W	WF	A	6.00- 8.5	T 36000W	Ws6IA	1212	1734	a	FD	106 1/2	10 1/4x3 1/2x1/2	TL
15	(D).....345DT	.....	187	Opt	54000	17300	10.00/20D	11.00/22	Cum HB600	6-4 1/2x6	672	17.	500	150-1800	7-4 1/2x16 1/2	Y	Spl 7741	12	Tim SW456W	WF	A	6.00-10.2	T 36000W	Ws6IA	1450	1626	a	FD	106 1/2	10 3/4x3 1/2x1/2	TL
16	(D).....354DT	.....	187	Opt	56000	17450	10.00/20D	11.00/22	Cum HB600	6-4 1/2x6	672	17.	500	150-1800	7-4 1/2x16 1/2	Y	Spl 7741	12	Tim SW456W	WF	A	6.00-10.2	T 27454W	Ws6IA	1450	1626	a	FD	106 1/2	10 3/4x3 1/2x1/2	TL
17	(D).....355DT	.....	187	Opt	56000	17900	10.00/20D	11.00/22	Cum HB600	6-4 1/2x6	672	17.	500	150-1800	7-4 1/2x16 1/2	Y	Spl 7741	12	Tim SD462W	2F	A	** -8.15	T 27454W	Ws6IA	1000	1626	a	FD	106 1/2	10 3/4x3 1/2x1/2	TL
18	**Reo**.....C-256	.....	169	200	40000	13100▲	10.00/20	10.00/20	Con T6427	6-4 1/8x4 1/2	427	6.2	336	153-2800	7-2 7/8x13.5	Y	Cla 270V4■	15	Tim SD3010	SF2	T	-7.5	Tim 35000	Ws4IA	1020	1470	var	TD	104 1/2	9 1/4x3 1/2x1/2	TfP
19	316	.....	186	▽248	54000	15550▲	10.00/20	10.00/20	Con R6602	6-4 7/8x5 1/8	602	5.9	464	200-2600	7-3 1/4x14.5	Y	Spl 6252d▽	15	Tim SD454	SF2	T	6.8-8.15	Tim 36000	Ws4IA	1082	1570	var	TD	108	10 1/4x3 1/2x1 1/4	TfP
20	**Sterling**...HBS130	.....	164	183	32000	11000	8.25/20	10.00/20	Wau 6MZA	6-4 1/4x4 1/4	404	5.6	290	130-3000	7-2 5/8x12 1/2	Y	Fu 5A43	5	T-SBD1555DPH	SF	L	6.80-13.14	T-35011H	T6IHV	664	1134	A	TX	83	9x3 1/4x1/4	A
21	.....HDS140	.....	164	183	36000	11800	9.00/20	10.00/20	Wau 6MZA	6-4 1/4x4 1/4	404	5.6	290	130-3000	7-2 5/8x12 1/2	Y	Fu 5A43	5	T-SD3010PA	2F	L	6.84-10.22	T-35011TW	Ws6IA	1074	1554	A	TX	83	9x3 1/4x1/4	A
22	.....HWS160	.....	164	183	42000	12800	10.00/20	11.00/22	Wau 6SRKR	6-4 3/8x5 1/4	517	5.5	368	125-2250	7-3x13 1/2	Y	Fu 5A62	5	T-SW3010PA	WF	L	5.40-8.50	T-36000TW	Ws6IA	1082	1574	A	TX	92	9x3 1/4x1/4	A
23	.....HWS235	.....	182	193	52000	15700	11.00/20	11.00/24	Wau 145GK	6-5 1/4x6	779	6.2	585	186-2100	7-3 1/2x17 3/4	Y	Fu 4B86	4	T-SW3012PA	WF	L	5.67-8.20	T-27454W	Ws6IA	1308	1892	A	TX	92	9 1/4x3 1/2x3/8	A
24	(D)...HWS160H	.....	182	193	42000	14250	10.00/20	11.00/22	Cum HB600	6-4 1/2x6	672	17.	500	150-1800	7-4 1/2x16 1/2	Y	Fu 4B86	4	T-SW456P	WF	L	4.71-6.17	T-36000TW	Ws6IA	1082	1574	A	TX	92	9x3 1/4x1/4	A
25	(D)...HWS235H	.....	182	193	52000	16000	11.00/20	11.00/24	Cum HB600	6-4 1/2x6	672	17.	500	150-1800	7-4 1/2x16 1/2	Y	Fu 4B86	4	T-SW456P	WF	L	5.66-8.20	T-27454W	Ws6IA	1308	1892	A	TX	92	9 1/4x3 1/2x3/8	A
26	.....HCS195	.....	170	189	48000	15300	10.00/20	11.00/22	Wau 140GK	6-4 1/2x5 1/2	525	6.0	426	142-2200	7-3 1/4x13 1/2	Y	Fu5A62-3A92	15	Own 195W	CD	R	6.04-7.31	T-36000TW	Ws6IA	1082	1622	A	TX	83	9 1/4x3 1/2x1/4	A
27	.....HCS265	.....	182	193	60000	17750	11.00/20	12.00/24	Wau 145GK	6-5 1/4x6	779	6.2	585	186-2100	7-3 1/2x17 3/4	Y	Fu 4B86♦	12	Own 265W	CD	R	9.21-13.16	T-27454W	Ws6IA	1060	1732	A	JX	92	9 1/4x3 1/2x1/4	AL
28	.....HCS297	.....	182	193	70000	20750	12.00/24●	13.00/24▲	Wau 145GK	6-5 1/4x6	779	6.2	585	186-2100	7-3 1/2x17 3/4	Y	Fu 4B86♦	12	Own 330W	CD	R	9.21-13.16	T-27454W	Ws6IA	1280	1872	A	JX	92	9 1/4x3 1/2x1/4	AL
29	.....HCS330	.....	174	187	80000	23150	12.00/24	14.00/24▲	Wau 145GK	6-5 1/4x6	779	6.2	585	186-2100	7-3 1/2x17 3/4	Y	Fu 4B86♦	12	Own 330W	CD	R	9.21-13.16	T-27454W	Ws6IA	1280	1872	A	JX	91	12x3 1/2x1/4	AL
30	(D)...HCS195H	.....	182	193	48000	16000	10.00/20	11.00/22	Cum HB600	6-4 1/2x6	672	17.	500	150-1800	7-4 1/2x16 1/2	Y	Fu4B86-3A92	12	Own 195W	CD	R	6.04-7.31	T-36000TW	Ws6IA	1082	1622	A	TX	92	9 1/4x3 1/2x1/4	A
31	(D)...HCS265H	.....	182	193	60000	18100	11.00/20	12.00/24	Cum HBD600	6-4 1/2x6	672	17.	500	150-1800	7-4 1/2x16 1/2	Y	Fu 4B86♦	12	Own 265W	CD	R	9.21-13.16	T-27454W	Ws6IA	1060	1732	A	JX	92	9 1/4x3 1/2x1/4	AL
32	(D)...HCS297H	.....	182	193	70000	21050	12.00/24●	13.00/24▲	Cum HBD600	6-4 1/2x6	672	17.	500	150-1800	7-4 1/2x16 1/2	Y	Fu 4B86♦	12	Own 330W	CD	R	9.21-13.16	T-27454W	Ws6IA	1280	1872	A	JX	92	9 1/4x3 1/2x1/4	AL
33	(D)...HCS330H	.....	174	187	80000	23450	12.00/24	14.00/24▲	Cum HBD600	6-4 1/2x6	672	17.	500	150-1800	7-4 1/2x16 1/2	Y	Fu 4B86♦	12	Own 330W	CD	R	9.21-13.16	T-27454W	Ws6IA	1280	1872	A	JX	91	12x3 1/2x1/4	AL
	Truckstell																														
34	(C)...F2X26.2F	.....	156	237	26000	▲5900	7.50/20	8.25/20	Ford	8-3 7/8x3 3/4	239	6.4	180	100-3800	3-2 1/2x4.71	N	Ford	4	Ford	SF	..	** -6.67	Ford	F6IHV	502	836	Co	TX	82 1/2	7 1/2x3x.47	CT f
35	(C).F2X27-0.2F	.....	156	237	27000	▲6450	7.50/20	8.25/20	Ford	8-3 7/8x3 3/4	239	6.4	180	100-3800	3-2 1/2x4.71	N	Ford	8	Eat 1350	SFd	..	5.83-8.11	Ford	F6IHV	502	836	Co	TX	82 1/2	7 1/2x3x.47	CT f
36	(C)...F2X34.2F	.....	156	237	34000	▲8335	7.50/20	9.00/20	Ford	8-3 7/8x3 3/4	239	6.4	180	100-3800	3-2 1/2x4.71	N	F and BL	12	Cla R1250	SF	..	5.67-6.83	Ford	F6IHV	635	1033	Co	TX	82 1/2	7 1/2x3x.47	CT f
37	(C)...F2X34-0	.....	135	224	34000	▲8585	7.50/20	9.00/20	Ford	8-3 7/8x3 3/4	239	6.4	180	100-3800	3-2 1/2x4.71	N	Ford and BL	12	Cla R1250	SF	..	5.67-6.83	Ford	F6IHV	635	1033	Co	TX	82 1/2	7 1/2x3x.47	CT f
38	(C)...F4X26.4R	.....	144	210	26000	▲6300	7.50/20	8.25/20	Ford	8-3 7/8x3 3/4	239	6.4	180	100-3800	3-2 1/2x4.71	N	Ford	8	Ford	SF	..	6.07-10.5	Ford	F6IHV	502	836	Co	TX	63 1/4	7 1/2x3x.47	CT f
39	(C)...F4X27-0	.....	117	180	27000	▲6300	7.50/20	8.25/20	Ford	8-3 7/8x3 3/4	239	6.4	180	100-3800	3-2 1/2x4.71	N	Ford	8	Ford	SF	..	6.07-10.5	Ford	F6IHV	502	836	Co	TX	63 1/4	7 1/2x3x.47	CT f
40	(C)...F4X29.4R	.....	144	210	29000	▲7000	7.50/20	8.25/20	Ford	8-3 7/8x3 3/4	239	6.4	180	100-3800	3-2 1/2x4.71	N	Ford	16	Eat 1350	SFd	..	7.47-12.9	Ford	F6IHV	502	836	Co	TX	63 1/4	7 1/2x3x.47	CT f
41	(C)...F4X30-0	.....	117	180	30000	▲7200	7.50/20	8.25/20	Ford	8-3 7/8x3 3/4	239	6.4	180	100-3800	3-2 1/2x4.71	N	Ford	16	Eat 1350	SFd	..	7.47-12.9	Ford	F6IHV	502	836	Co	TX	63 1/4	7 1/2x3x.47	CT f
42	(C)...C2X26.2F	.....	157	234	26000	▲5800	7.50/20	8.25/20	Chevrolet	6-3 7/8x3 1/2	235	6.6	192	93-3100	4-2 1/4x5 1/8	N	Chevrolet	4	Chevrolet	SF	..	** -6.17	Chevrolet	C6IHV	546	780	Co	2I	82 1/4	7 1/2x3x.47	CT f
43	(C)...C2X28.2F	.....	157	234	28000	▲6500	7.50/20	8.25/20	Chevrolet	6-3 7/8x3 1/2	235	6.6	192	93-3100	4-2 1/4x5 1/8	N	Chevrolet	8	Tim	SFd	..	5.64-8.22	Chevrolet	C6IHV	546	780	Co	2I	82 1/4	7 1/2x3x.47	CT f
44	(C)....C2X34-0	.....	141	224	34000	▲8590	7.50/20	9.00/20	Chevrolet	6-3 7/8x3 1/2	235	6.6	192	93-3100	3-2 1/4x5 1/8	N	C and BL	8	Cla R1250	SF	..	5.67-6.83	Chevrolet	C6IHV	659	1033	Co	TX	82 1/4	9 1/4x3x.50	CT f
45	(C)..C2X34.2F	.....	157	234	34000	▲8420	7.50/20	9.00/20	Chevrolet	6-3 7/8x3 1/2	235	6.6	192	93-3100	4-2 1/4x5 1/8	N	C and BL	12	Cla R1250	SF	..	5.67-6.83	Chevrolet	C6IHV	659	1033	Co	TX	82 1/4	9 1/4x3x.50	CT f
46	(C)..C4X26.4R	.....	145	212	26000	▲6120	7.50/20	7.50/20	Chevrolet	6-3 7/8x3 1/2	235	6.6	192	93-3100	4-2 1/4x5 1/8	N	Chevrolet	8	Chevrolet	SF	..	6.41-11.1	Chevrolet	C6IHV	546	780	Co	2I	63 3/4	7 1/2x3x.47	CT f
47	(C)....C4X27-0	.....	117	184	27000	▲6215	7.50/20	7.50/20	Chevrolet	6-3 7/8x3 1/2	235	6.6	192	93-3100	4-2 1/4x5 1/8	N	Chevrolet	8	Chevrolet	SF	..	6.41-11.1	Chevrolet	C6IHV	546	780	Co	2I	63 3/4	7 1/2x3x.47	CT f
48	(C)..C4X29.4R	.....	145	212	29000	▲6880	7.50/20	8.25/20	Chevrolet	6-3 7/8x3 1/2	235	6.6	192	93-3100	4-2 1/4x5 1/8	N	Chevrolet	16	Eat 1350	SFd	..	7.47-12.9	Chevrolet	C6IHV	512	836	Co	TD	63	7 1/2x3x.47	CT f
49	.....C4X30-0	.....	117	184	30000	▲7290	7.50/20	8.25/20	Chevrolet	6-3 7/8x3 1/2	235	6.6	192	93-3100	4-2 1/4x5 1/8	N	Chevrolet	16	Eat 1350	SFd	..	7.47-12.9	Chevrolet	C6IHV	512	836	Co	TD	63	7 1/2x3x.47	CT f

▲ Includes cab. ● Rear only: Front 11.00/24. ♦ Auxiliary transmission, Spicer 8031. △ Rear only; Front 12.00/24. ‡—Hydraulic Coupling. ♦—Chassis Weights on Duals Front, Center and Rear. ■ 6231 Spicer Auxiliary Transmission
▽ Special W.Bs. available on request. ▼ 8031F-G Spicer Auxiliary Transmission Available.

INTRODUCING

(CONTINUED FROM PAGE 76)

. . . WILLIAM B. PROSSER, as general manager of the Perfect Circle Corporation.

. . . D. N. MILLER, as midwestern regional manager of Highway Trailer Co.

. . . H. J. GRASSEL, as eastern regional manager, Highway Trailer Co.

. . . EDWIN C. PAIGE, as head of the Fleet Section of the Technical Service Division, Ethyl Corp.

Mr. Paige succeeds ERROL J. GAY, who has resigned from Ethyl Corp. to open a Detroit office as private consultant.

(TURN TO PAGE 91, PLEASE)

Introducing

(CONTINUED FROM PAGE 88)

. . . HARRY F. ANDERSON, formerly sales promotion manager, promoted to assistant to James D. Mooney, president and chairman of the board of Willys-Overland Motors.

. . . E. G. LEONARD, as manager of the New York branch of Highway Trailer Co.

. . . WILLIAM P. WALLACE, left, and ROBERT JACKSON, right, assigned to the sales engineering staff of the Detroit office, Perfect Circle Corp.

. . . GEORGE SCOTT, formerly with the Firestone Tire & Rubber Co. as petroleum sales coordinator, who has joined the White Motor Co. as field representative for the Service Sales Division.

. . . J. W. CARPENTER, of New York, and A. B. CHAPMAN, of Los Angeles, as assistant sales managers for the Gillette Tires division of United States Rubber Co.

. . . P. W. STANSFIELD, named manager of passenger car tire sales of the Replacement Tire Sales division of The B. F. Goodrich Co.

. . . E. W. DECK, formerly general manager of the Trent Tube Mfg. Co. at East Troy, Wis., named manager of the Ithaca plant of the Morse Chain Co., a division of Borg-Warner Corp.

. . . RAY SANDERS, appointed general manager of the Pacific Chemical Co., Los Angeles, a division of the American-Marietta Co.

. . . HAROLD H. REED, formerly assistant manager of Air Reduction's Metropolitan (New York) district, appointed manager of the district. OREN M. DONOHUE, formerly assistant sales manager, succeeds Mr. Reed.

. . . LEONARD A. STEWART, as chief engineer of The American Coach & Body Co., Cleveland Ohio.

. . . JEROME G. BRADY, as tool engineer and representative in the Pittsburgh district and LESTER SPEICKHOFF as tool engineer and representative in the Syracue area, for Kennametal, Inc., Latrobe, Pa.

. . . GEORGE L. MELLINGER as newly-elected vice-president and director of sales of Highway Safety Appliances, Inc., makers of the Elston sander.

. . . HAROLD B. FRYE, as head of the engineering department of The Griffin Lamp Co., Hamilton, Ohio, manufacturers of automotive safety lighting equipment for fleet operation.

RUBBER CONSUMPTION UP

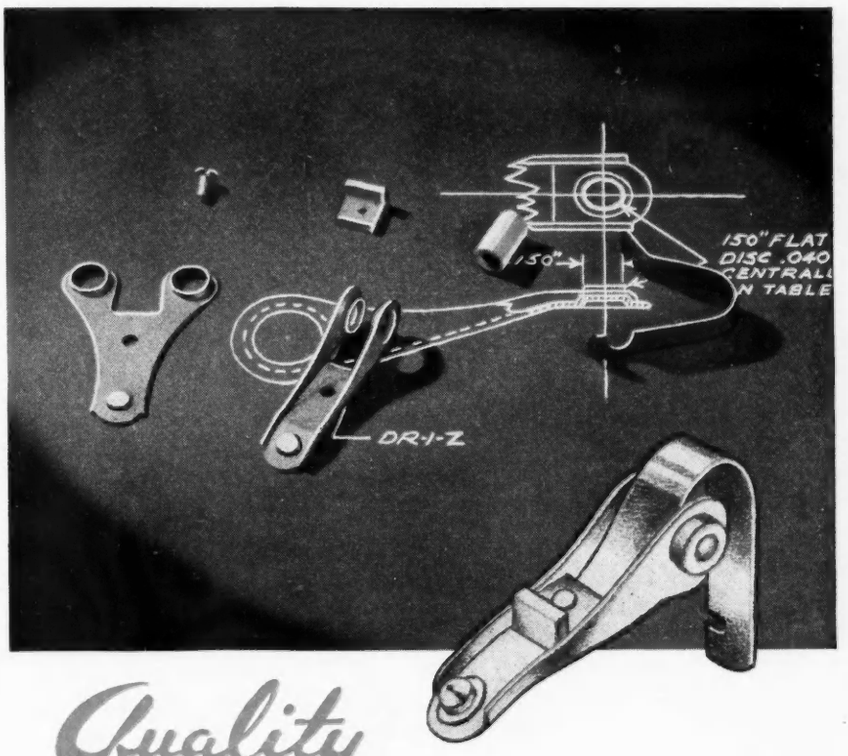
American-made rubber consumption for 1947 has passed the half million ton mark, more than the average total annual consumption of all types of rubbers for ten years prior to World War II.

The Rubber Manufacturers Association for August reported that manufacturers had used 389,645 tons of American rubber in the first eight months of the year.

Consumption of these rubbers is currently running well over 35,000 tons a month. This would put total use above the 500,000 ton mark by December 31.

HOFFMAN HONORED BY SAE

Paul G. Hoffman of Studebaker and board chairman and treasurer of the Automotive Safety Foundation, was honored recently by the Society of Automotive Engineers as the Beecroft Memorial Lecturer for 1947 for his contribution to traffic safety.



Quality
ALL THE WAY . . .

Pride in developing the best in ignition is reflected in each component part of every Niehoff Product, From start to finish—it is quality all the way.

As a leader in Ignition, Niehoff is constantly searching for new and better materials, more efficient methods, and the highest skilled craftsmen to perpetuate this tradition to maintain peak quality in manufacture and performance.

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BOOKS FOR FINLAND

The library of Finland's excellent technical institute, "Teknillinen Korkeakoulu," was bombed and totally destroyed during the war.

Word has been received that the institute would welcome gifts of scientific and technical books and periodicals from America to take the place of those destroyed. In the efforts for recovery that the Finns are making, the lack of technical library facilities is a very serious handicap. It would be a practical act of friendship to a nation that holds America in high regard if Americans should contribute good technical books and periodicals to this library.

Any such gifts should be marked for the Institute of Technology, Helsinki, and sent to the Legation of Findland, 2144 Wyoming Ave., N. W., Washington, D. C. Dr. K. T. Jutila, the Finnish Minister, will arrange for their being shipped to Finland.

SCARRATT RETIRES

Albert W. Scarratt, vice-president in charge of engineering and patents for International Harvester Co., has retired after more than 20 years service with the company. He joined Harvester in 1927 as chief engineer of motor trucks and coaches, was promoted to chief of automotive engineering in 1935 and elected vice-president in 1939.

Profits Are Measured in Mileage

Extra miles from tires means lower operating costs, higher net profits. Flats and expensive repairs—caused by underinflation—let schedules down, increase costs, cut profits.

To avoid tire failures, inspect valves regularly for worn cores and missing caps. Properly inflated tires can't lose air through valves sealed with *air-tight* Schrader Caps—Caps that are guaranteed to hold up to 250 lbs. pressure.

It's asking for trouble to send vehicles out with only a guess as to tire pressures. An accurate gauge in every vehicle gives the right answer every time. Correct tire inflation increases tire economy and reduces the number of costly roadside flats that cut down your P-R-O-F-I-T-S.

Call your regular supplier today for the caps, cores, stems, gauges and air service fittings you need. Always *specify* Schrader.

SCHRADER CAPS, CORES AND GAUGES MAKE TIRES LAST LONGER!

Keep a Schrader Gauge in Every Vehicle

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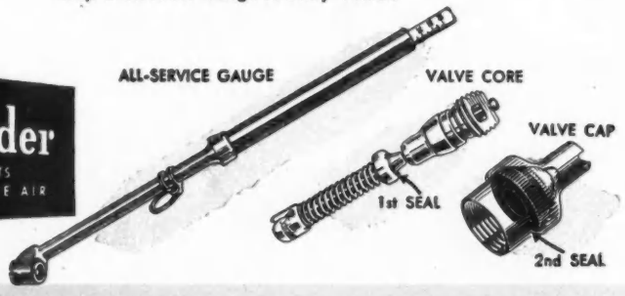
PRODUCTS
CONTROL THE AIR



A. SCHRADER'S SON, *Division of Scovill Manufacturing Company, Incorporated,* **BROOKLYN 17, N. Y.**

World's Largest Manufacturer of Tire Valves, Gauges and Accessories

Quiz Answers

CCJ Quiz on P. 68

1. a. In 1701, a Frenchman, Antoine Laumet de la Mothe Cadillac, founded Fort Pontchartrain, which in time was to become d'Etroit or Detroit—the "city of the straits."

2. b. Knudsen—and he had his way. When the Army said the plants had to be built in the interior, Knudsen replied, "Then you will have to move the population of Detroit out there to man the job."

3. d. Gen. Devers. He went on, "They forgot all about their rivalries under that Automotive Council . . . Because they had the 'know-how,' the initiative, and energy, we gave them the impossible things to do . . . They did them, and set a pattern . . . I take my hat off to Detroit. There never has been such a team on earth."

4. c. In 1894, King built and ran a gasoline powered car, the first to appear publicly in the motor capital of the world.

5. c. From a population of 285,315 in 1900 when the auto industry first was making itself felt to 1,623,452 in 1940 is an increase of 468 per cent. Today the population of the city is estimated to exceed 1,800,000.

6. a. The Detroit Athletic Club is so much a rendezvous of the automotive elite that for a long time many persons thought the initials D. A. C. stood for Detroit Automobile Club. Practically everybody of importance in the automotive industry in Detroit belongs to the club. There was a time when membership in the D. A. C. was almost as important as a rating in Dun and Bradstreet.

7. d. Strangely enough, the biggest industry in Detroit before the coming of the gasoline industry was tobacco. The growth of Detroit as a cigar center had nothing to do with raw material or transport factors. It was a matter of labor supply. Cigars are rolled by hand, mostly by women. Detroit had plenty of women workers available, as its other industries used male help predominantly. More important, Detroit then was a non-union town, while older centers had been unionized.

8. d. Plans call for four acres of exhibition space in the 55-million dollar Civic Center on the Detroit River. There will also be a convention hall and civic auditorium. It may take a generation to complete, but when it is finished, the national show will no doubt move to its home town.

9. Only four—Chevrolet, Dodge, Federal, and Ford.

10. a. True—from 1805 to 1847.

b. True—Because of its geographical position between two large bodies of water.

c. True.

d. False. The honor is usually accorded to the Duryea brothers of Springfield, Massachusetts.

e. True. In 1899, Detroit was top city in the manufacture of freight cars and stoves.

Really *Special* Delivery

AMERICA'S 7000 DEPARTMENT STORES *deliver billions of packages every year with a dependability comparing most favorably with that paragon of all delivery systems, the U. S. Mails. Without this dependable service, home-makers in outlying residential districts would lose an essential convenience, as curtailed delivery during the war proved.*

ALL THIS YEAR, the average American family will spend about $275 for everything sold by department stores. And can you think of anything that isn't? Or much of it that isn't delivered to your door . . . the year 'round . . . by efficient truck delivery? Here is another transportation service . . . adding much to the convenience and enjoyment of modern living . . . and costing little because of efficient, economical modern trucks.

Ever since the first White truck went into department store service, in 1900, White delivery fleets have brought the quality traditions of America's finest stores to the doors of their customers. It is another field in which performance has made White Super Power the preference of the most experienced.

Correctly selected for the work they do, properly maintained and skilfully manned, Super Power Whites are *precision tools of transportation.* Their owners can control costs with scientific accuracy. This applies to every truck-using business, as your White Representative will gladly explain.

THE WHITE MOTOR COMPANY
Cleveland, Ohio, U. S. A.
THE WHITE MOTOR COMPANY OF CANADA LIMITED
Factory at Montreal

FOR MORE THAN 45 YEARS THE GREATEST NAME IN TRUCKS

Exchange Parts

(CONTINUED FROM PAGE 35)

programs, ranging all the way from brake valves to complete engines.

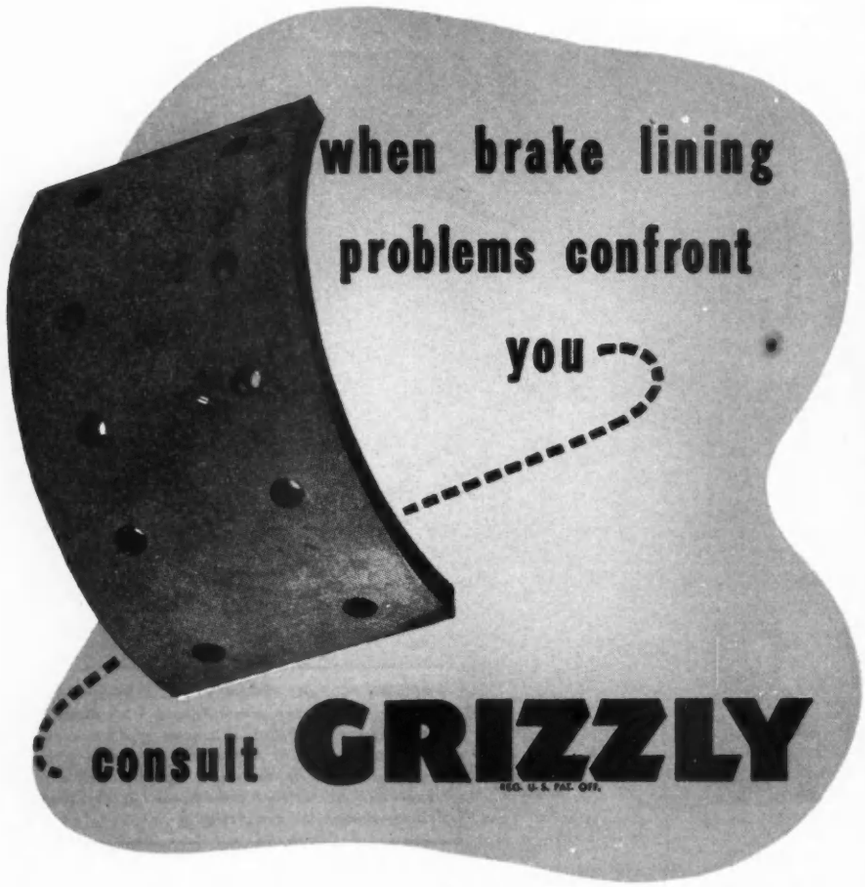
In addition to those shown in the tables, several others had specific comments. Dodge, for instance, is offering *new* engine assemblies at prices closely competitive with exchange equipment, and many of its dealers offer rebuilding services for minor assemblies. Sterling has a rebuilding program in the hands of its branch organization, but not under factory control. Fuller has a transmission rebuilding service which operates through the dealer organization of the truck manufacturers to whom it supplies original equipment.

Autocar, Brockway, Corbitt, Reo and Willys all reported that they had extensive plans under way for the merchandising of exchange items, but none was able to announce a nation-wide program at this time. Similarly the makers of Holly and Zenith carburetors are said to have exchange programs under consideration as does Leece-Neville, particularly in regard to its new alternating current generating equipment.

It was originally hoped that the table could show actual models and prices but when it is realized that Ford alone has 24 different exchange shock absorbers replacing some 69 different original-equipment models, the complexity of such a listing becomes at once obvious. For specific information on individual items it is suggested that readers contact the local agency of the manufacturer concerned.

END

(Please resume your reading on P. 36)



For over thirty years, leading service managers and fleet owners have relied on Grizzly to provide fast, practical solutions to countless brake lining problems. Constant laboratory research, alertness to new developments and invaluable experience gained in over thirty years' manufacturing experience, place Grizzly in an excellent position to solve brake lining problems of widely divergent natures.

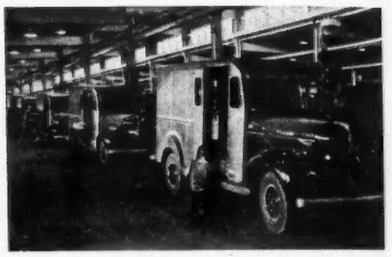
The next time you are faced with a brake lining problem, bring it to Grizzly—one of the largest, most dependable producers of fine brake lining for both automotive and industrial fields.

There's a Grizzly Distributor near you—call him today!
Grizzly Manufacturing Company, Paulding, Ohio

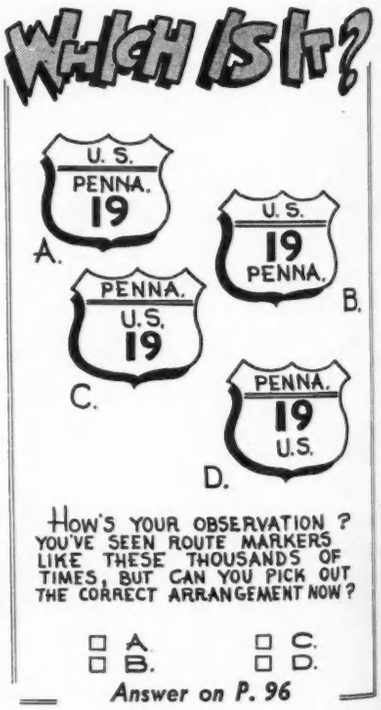
"Bear in Mind" . . . ask for

GRIZZLY
REG. U. S. PAT. OFF.
BRAKE LINING

Package Delivery Body



The final assembly line in The Herman Body Co., St. Louis, Mo., producers of a standardized line of general package delivery bodies, as well as a variety of vocational bodies. These bodies are of all-steel welded construction. The plant produces about 800 units per month, 400 units being represented by the general package delivery model


WHICH IS IT?
U. S. PENNA. 19
A.
U. S. 19 PENNA.
B.
PENNA. U. S. 19
C.
PENNA. 19 U. S.
D.
HOW'S YOUR OBSERVATION? YOU'VE SEEN ROUTE MARKERS LIKE THESE THOUSANDS OF TIMES, BUT CAN YOU PICK OUT THE CORRECT ARRANGEMENT NOW?
☐ A. ☐ C.
☐ B. ☐ D.

Answer on P. 96

South Wind

REG. U. S. PAT. OFF.

AMERICA'S FINEST HEATING-VENTILATING SYSTEMS

977 SERIES

These Heaters Bear the Seals of UNDERWRITERS' LABORATORIES and INTERSTATE COMMERCE COMM.

•

Approved by Marine Underwriters

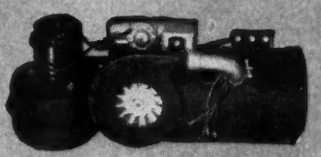
•

School Bus Approval

For Passenger Cars, Truck Cabs Delivery Vehicles

SOUTH WIND MODEL 977-G
"CUSTOM BUILT" (6 volt)
MODEL 977-B-1 (12 volt)

Automatically ventilates, distributes heat quickly and evenly throughout the vehicle like the most modern home heating plant. Seals out drafts, whisks away smoke and stale air. Underhood installation is quiet, saves space.



Heats in 45 seconds

Thermostatic Control

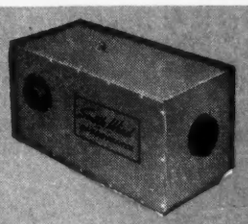
A complete air change every 60 seconds

Clear vision safety in all weather

For Cargo Trailers, Trucks..... and Buses

SOUTH WIND MODEL 977-C
"CARGOHEATER"

A "package" heating unit requiring less than 2 cubic feet of space. Keeps temperature in cargo compartment constant without attention from driver. Can be operated during loading or for standby heating.



Operates Independent of Engine

Fully Automatic

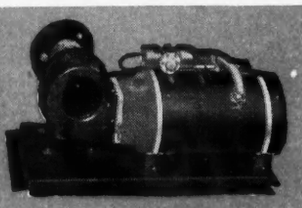
No fumes—No smoke

Electric Ignition—other safety features

For All Utility Heating Purposes

SOUTH WIND MODEL 977-D
"UTILITY HEATER"

A compact heating plant which burns any grade of automotive gasoline. Can be concealed in out-of-the-way space. Ideal for gas stations, cabins, and trailers. Produces clean, odor-free heat safely and economically.



Home-type Thermostat

Uniform Heat Distribution

Reduces Condensation

Flexible in Application

Weighs only 30 pounds

Made by STEWART-WARNER, Makers of the Famous South Wind "90-Second" Car Heater

South Wind Division, Stewart-Warner Corporation, Indianapolis 7, Indiana

Use postage-paid card inserted on page 61 for free information on advertised products

PM Plan

(CONTINUED FROM PAGE 38)

PM check because one can be checking on the engine while another is working on spindle bearings, or checking U joints, and so on.

Our PM sheet has proved to be a means of getting the job done. The first operation is to check the compression and record the reading for each cylinder. When we study the truck with a view to overhauling and study the previous three PM sheets, we have compression readings for the past nine months or 7500 miles. They'll tell you plenty.

On the bottom of the blank is a space for writing up other work that is needed, such as a body repair, a paint job. Finally there is space for mechanic to write up his time for inspection and repair. These hour costs go to the Master Cost Sheet (Fig. 3), and since this master sheet must continually call for its figures it prevents any let down in keeping the other records such as the PM sheet fully completed and filled out.

Tire Form

TIRES and tire repairs are kept on a separate record and drivers have cards which are filled out if they have to have tire service on the route (Fig. 6).

Parts Inventory Low

SINCE a large number of different kinds and sizes of trucks leads to a large parts inventory, it behooves the maintenance department to try to keep down the inventory whenever and wherever possible.

To this end, while we keep a reasonably good supply of constantly used parts, we do not load up on replacement supplies nor do we prepare for "the great emergency" with a constantly increasing list of parts.

We try to prevent the emergency with our PM service rather than stock parts against the time it will happen.

Since prior to our major jobs we scan the previous three PM blanks, we also have time to prepare for the job. So on the large jobs when the records indicate that a major operation is necessary we make the decision and *then* order the parts for that job. If our records are any good, we can tell about what we will want to do such as install oversize pistons, bearings.

On some units the most satisfactory job might be to install a new engine and in such cases we order the engine in advance and do the job *after* the parts are in hand.

We find that this saves having our money tied up in a great many expensive parts for as long as six to 10 months.

In times of scarcity of parts this same system also works to our advantage because we can start to accumulate the parts needed several months in advance of the time of the job. When certain items may not be available at all, we may be able to figure out workable substitutes.

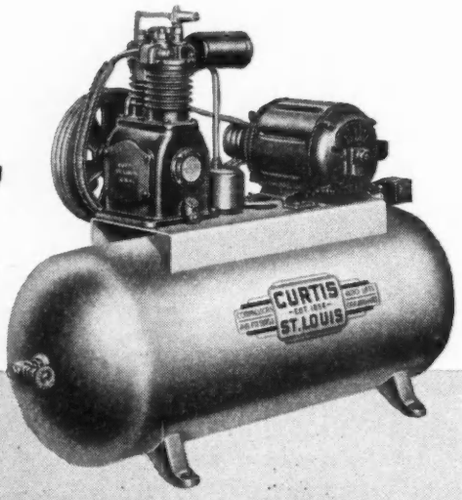
Since our records show all the

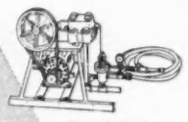
(TURN TO PAGE 98, PLEASE)

"Positive Lubrication"

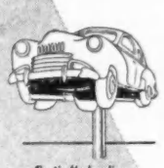
Another Long-Life Feature of

CURTIS AIR COMPRESSORS





Curtis Hydraulic Car Washers



Curtis Hydraulic Car Lifts

The patented Centro-Ring self-oiling system with only one moving part assures proper lubrication at all times; uses less oil than ordinary splash oiling systems, contributes to the exceptionally long life of every Curtis Compressor. Other Curtis advantages include:

- Timken Bearings
- Automatic unloading starter
- Automatic welded electric tank
- Dust-proof enclosed compressor
- Precision construction throughout

Write for Bulletin C-6 for full information on Curtis Air Compressors, Hydraulic Car Washers and Full Hydraulic Auto Lifts.

CURTIS PNEUMATIC MACHINERY DIVISION
of Curtis Manufacturing Company
1970 Kienlen Avenue, St. Louis 20, Missouri

93 Years of Precision Manufacturing

F568A

CURTIS PNEUMATIC MACHINERY DIVISION of Curtis Manufacturing Co.
1970 Kienlen Ave., St. Louis 20, Missouri

Please send me complete information on Curtis Air Compressors, Auto Lifts, and Car Washers.

Name.....
Firm.....
Address.....
City.....Zone.....State.....

● WHICH IS IT?

ANSWER... (To Question on P. 94)

Arrangement C is correct.

(Another carton quiz on P. 98)

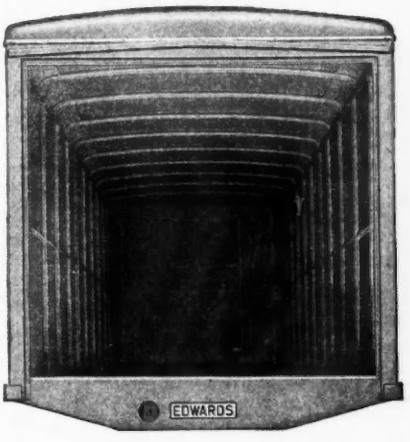
WITH

EDWARDS TRAILERS

EVERY LOAD IS A PROFITABLE LOAD

YOU can be assured that it was a profitable trip when an Edwards backs up to unload. Breakdowns are few and far between. Edwards life is therefore kept at a maximum, and maintenance costs at a minimum. This reliability stems from the tried and proved engineering principles that are an integral part of their design... from the expert craftsmanship employed in every stage of the manufacture of these fine trailers... from the use of only the finest materials in every Edwards.

Write today for literature illustrating the many models and outstanding Edwards features.



BODY CONSTRUCTION

Cargo space is maximum. Built of lightweight formed steel stakes, roof bows and rear door frame; all internal welded for trouble-free long life and strength.

EDWARDS

EDWARDS IRON WORKS, INC., SOUTH BEND, INDIANA

PM Plan

(CONTINUED FROM PAGE 96)

sizes, under and over for each unit, and the accumulation of the records show the past history, it is a comparatively easy matter to buy parts in anticipation of an early need, and thus have the parts and keep inventory down at the same time.

We work out our whole PM system and major repairs from a study of each unit as an individual and let the fleet as a whole take care of itself. This has proved practical and efficient in keeping all of them going with a minimum of trouble.

It is also necessary because of the wide divergency of the needs of our trucks. For instance, a bunch of our units have engines and front wheel drives all in a unit. This requires a different type of servicing than to change the engine in a V-8 Ford or to rebuild the engine in one of our large Diamond T's.

END

(Please resume your reading on P. 39)

New Pitch on PM

(CONTINUED FROM PAGE 59)

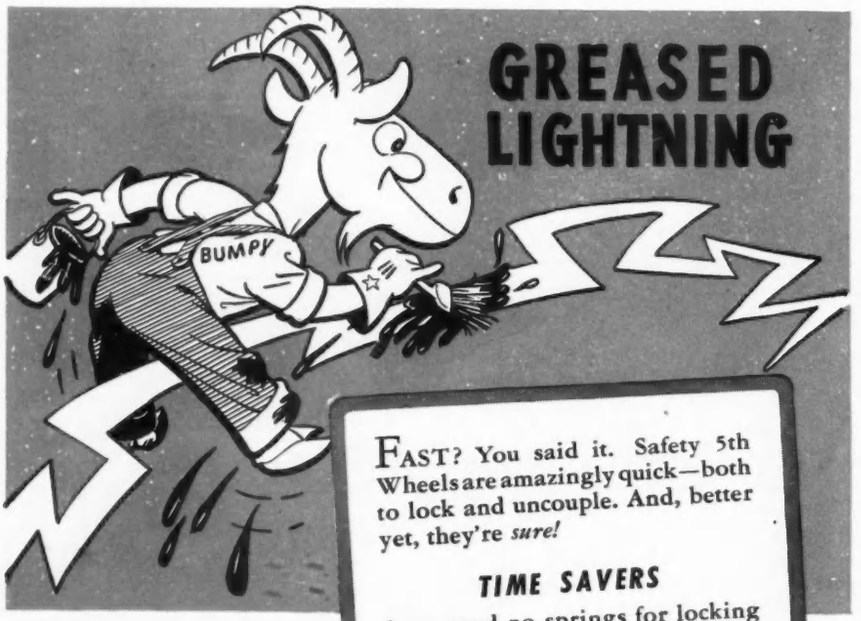
time at five months so that we would be sure to have every unit in and corrected within the six-month period. This plan has worked very well for us.

A similar check on 500 trailer wheel bearing changes showed that six months was the average time between bearing pack or change needs. Just as with the tractors, we lowered this to five months. The trailers float all over the system. So each time the trailer bearings are packed we paint the date on the front of the trailer. (see photo, page 59). This is notice to all drivers and all terminal mechanics that the next packing date is May 26, 1947.

Each mechanic in charge or shop foreman at headquarters or at other terminal points must file a weekly report showing equipment in and out of service. Out-of-city weekly reports are mailed weekly to our Oklahoma City maintenance record department.

By checking these reports we can tell if such and such a trailer, which has not been at our headquarters terminal, has had the wheel bearings packed for its regular five months' check. If not, we send out a notice to the shop where the trailer is reported as being and request that the

(TURN TO PAGE 100, PLEASE)



FAST? You said it. Safety 5th Wheels are amazingly quick—both to lock and uncouple. And, better yet, they're *sure!*

TIME SAVERS

Jaws need no springs for locking . . . *stay* locked . . . unlock with a single one-hand movement. In all positions, in all weather, the patented operating principle saves time for *both* tractors and drivers.

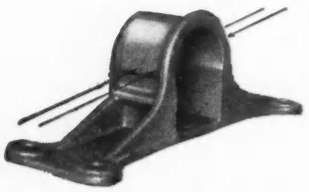
SAFE AND STRONG

Speed in pick-up and uncoupling. Safety that stays *safe.* Stamina for the toughest, roughest use. These are things that 40 years of railroad coupler experience has built into this better, *safer* wheel.

DO THIS

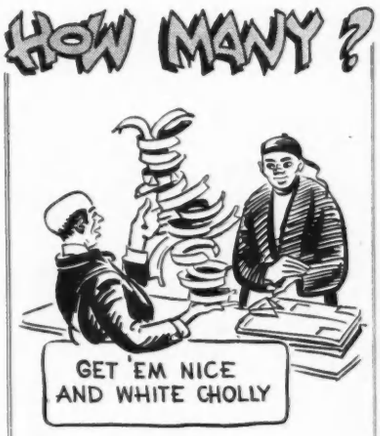
Put Safety 5th Wheels on the next tractors you buy. You'll *like* them. Automotive Division, American Steel Foundries, 400 N. Michigan Ave., Chicago 11, Illinois.

The new Series 400-C. Dealers and distributors wherever you go.



Sockets on the plate fit well down over the trunnions so that tractor *pull* is transmitted in a *straight line.* Plate won't "lift" under power or braking.

A·S·F *Safety* 5th WHEEL



AT MID-YEAR, THE AUTO PLANTS AND THEIR SUPPLIERS EMPLOYED 800,000 FACTORY WORKERS. AT THE SAME TIME, THE AUTOMOTIVE INDUSTRY EMPLOYED HOW MANY WHITE COLLAR WORKERS?

☐ 50,000 ☐ 400,000
☐ 170,000 ☐ 800,000

Answer on P. 100

The A.B.C.'s of Piston Ring Performance

Here are the Simple, Understandable Reasons for Steel-Vent's Longer Life

Hastings Steel-Vent has been progressively engineered over a long period of years to increase the life span of ring jobs—to lengthen the efficient, effective life of such jobs. All this engineering has been aimed at developing—

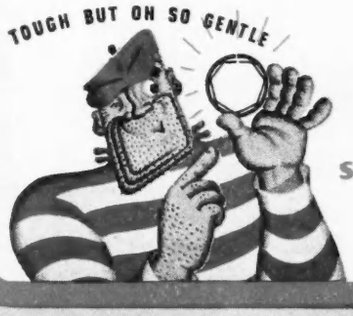
1. A ring that provides generous wall lubrication—always under control.
2. A ring that can't clog.

Hastings Steel-Vent's greater oil-carrying capacity provides generous wall lubrication, always under control. Its exclusive side-opening spacer operates against a moving segment with a "breathing" action that flushes away sludge and clogging particles of carbon. Steel-Vent just can't clog.

It's as simple as that.

HASTINGS MANUFACTURING COMPANY • HASTINGS, MICHIGAN

Hastings Ltd., Toronto



HASTINGS

STEEL-VENT PISTON RINGS

Generous Wall Lubrication
Always Under Control

New Pitch on PM

(CONTINUED FROM PAGE 98)

job be done. The next weekly work report better show that this work has been done.

In addition to this we carry a master wall chart showing all trailer units and as nearly as we can their location. On this chart, after the trailer number, we note the date when last the bearings were packed. This gives us a double check.

We live up to the A, B, and C PM schedule 100 per cent and by so doing we believe that we have reduced road failures by at least 50 per cent. And we know that having the budgeted schedule allows a considerable savings on the work because it gives our shops a fairly even load all the while.

Separate Board for Lubes

A SECOND PM bulletin board shows due dates for oil changes, grease jobs, and transmission and rear end changes. A part of our territory covers what is considered the great dust bowl. For this reason we feel that general greasing and, in particular, service to air and oil cleaners is one of the most important parts of our PM program. We service oil cleaners each month.

These are changed at each servicing time if there is any indication of need. We pay particular attention to see that no breather cap is left off and there is a line on our grease check report for checking and reporting the condition of breather caps.

We change oil each 3000 miles.

Each time a trailer or tractor arrives at the headquarters shop the equipment is washed with a hot steam hose. At each washing the shackles are given a steam cleaning and greased and this job is reported for the unit.

Engine Rebuilding

ON smaller trucks and pickups, complete engine rebuilding, without replacing the block, averages us (taken from 62 rebuilding jobs) $100. This breaks down into $35 for labor and $65 for replacement parts. Where block is replaced this figure is raised to $160, labor charge remaining the same.

For larger trucks an engine rebuilding job without block replacement runs $300, with $80 of this for labor and $220 for parts. If the block is replaced, the total runs $500, with the same $80 labor charge.

After the engine or motor has been rebuilt we place it in a running stand connected to a dynamometer, where it is allowed to idle for 3½ hours. It is then given ½ load for 3½ hours. After this it is run on full load for 1 hour.

We have found this breaking in period very important and it has made our unit assemble replacement program work a great deal better for us.

(TURN TO PAGE 102, PLEASE)

HOW MUCH in Delay & Repairs are Improperly-Tightened Wheel Nuts COSTING YOU EVERY YEAR?

Powerench-Tests on trucks picked at random reveal that 3 out of 4 wheels rolling have been improperly tightened with the old style hand wrench. *Only* with the Powerench *Can You Be Sure of Nuts Properly Tightened* to Specified 450 ft. lbs. A Powerench on Every Truck You Operate will *pay for itself quickly* by eliminating the risks of nuts working loose and the expense of broken studs, egg-shaped holes and undue tire wear.

NOW
$19.85 to fleets, garages and service stations

MADE BY
B. K. Sweeney Mfg. Co.
Denver 17, Colorado

Powerench Div., Dept C-12
B. K. SWEENEY MFG. CO.
1601 23rd St., Denver, Colorado
For a free demonstration of your Powerench, please advise name and address of your nearest distributor.

(Name) (Company)

(Type operation—No. trks.) (Street) (Zone)

(City) (State)

● HOW MANY?

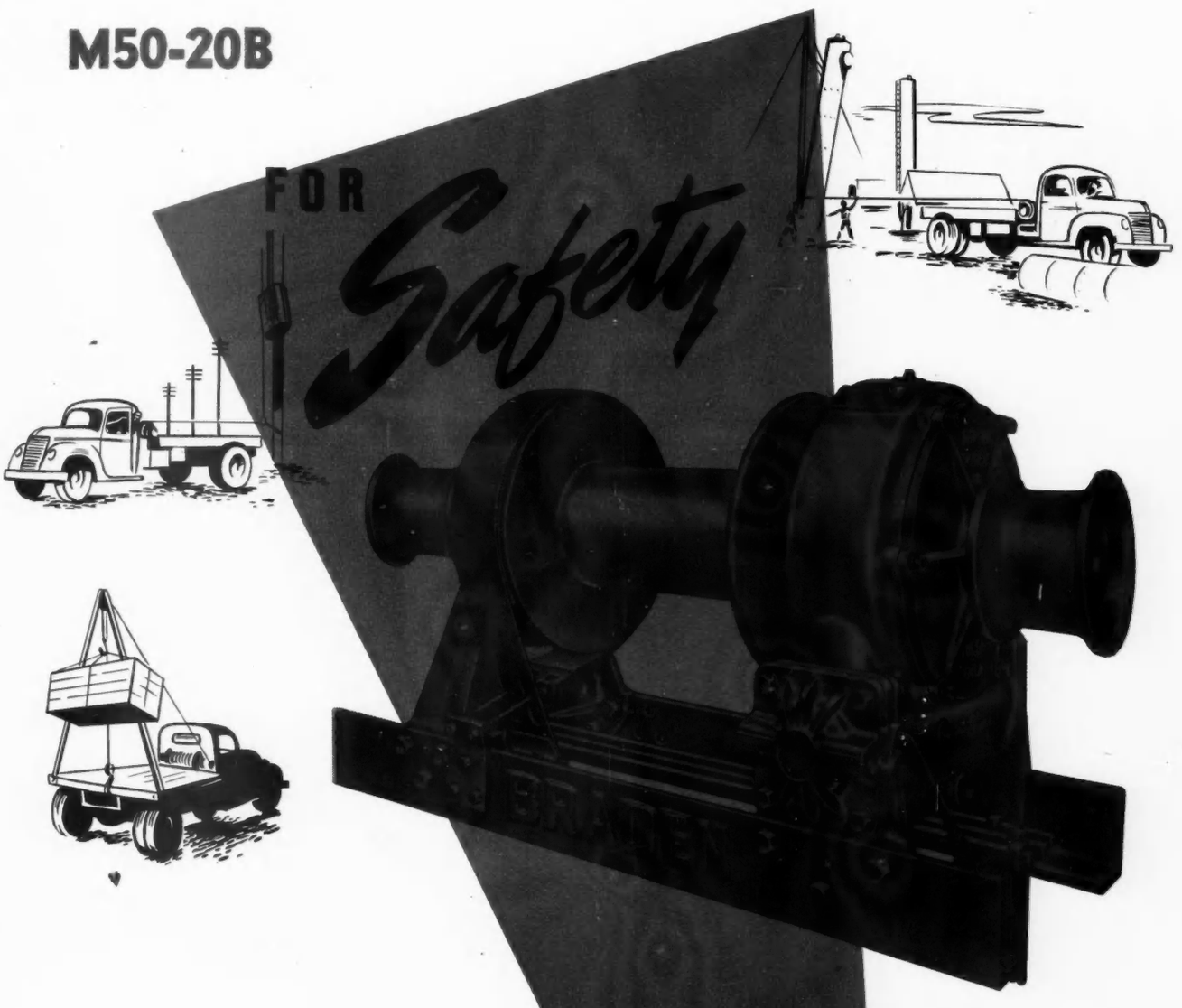
ANSWER... (To Question on P. 98)

170,000 white collar workers.

(Another cartoon quiz on P. 102)

The New BRADEN MODEL

M50-20B



The Newest of the NEW World Famous "M" series model winches, M50-20B, embodies all the outstanding features of the line PLUS the NEW Triplex Oil Cooled Safety Brake. The NEW Triplex Oil Cooled Safety Brake was Braden engineered to give the larger powered trucks of a progressive post-war automotive era the last word in SAFETY, EFFICIENCY and DURABILITY. See it . . . Operate it to appreciate it!

BUY BRADEN—*They are Safer*

BRADEN WINCH COMPANY
1001 East Admiral Boulevard

BRADEN Winches

TULSA 3,
Oklahoma

New Pitch on PM

(CONTINUED FROM PAGE 100)

We keep a stock of these rebuilt engines on hand along with rebuilt rear end parts and transmissions for immediate replacement. On all rebuilt engines we keep a full report, which must be filled in and filed when the engine is okayed. It shows all work done and measurements of under and oversize fittings. This saves time and effort later.

Recorders Tell All

WE have a report which each mechanic must file immediately upon returning from a road service call. This road report shows the date, location of garage to which mechanic is assigned, time the service call was received and time mechanic left garage, the time he arrived at equipment and the time equipment was again rolling. It gives the tractor and trailer number, the driver's name and the location as to near what town. The report then must show what was wrong and what was done. Then the time the mechanic arrived back at the garage. These forms are made out in duplicate and one copy is sent to my office.

It was from checking these reports that we decided we needed to install recording devices in all of our tractors. These meters give us a record of each trip, the mileage, time, driving speed, and more important, the record shows where the motor is idle and for how long. These recorders cost us around $60 installed. But we think we get our money's worth out of the installation.

For reasons which I think every maintenance foreman will understand I do not wish to say too much about the results here, but one thing I will say—we are having a lot less stops at a lot fewer towns. Moreover, we are having a lot less repeat service calls at the same locations.

Tire Records Complete

OUR tire record system starts out with the new tire. We use a form furnished by one of the tire companies. This card shows the make, size, type, grade of tire, the cost, order number, from whom purchased, and our brand number.

All of our tires are branded with YT, and a number starting with a

(TURN TO PAGE 104, PLEASE)

SUPPLYING refrigerated air to the interior of an air liner, this truck unit is a product of the International Harvester Company and uses a Metro body fitted with Hansen Hardware. It pays to keep pace with the times!

The job of the refrigerating unit and that of the Hansen Lock used is to keep the cold in and the heat out. The Lock, with its slam-and-take-up bolts, keeps the doors tight-shut and rattle-proof.

Custom-built bodies are better, stronger, more durable and require less upkeep when Hansen-equipped. The Hardware for hard wear, Hansen often outlasts units on which installed. *What are your requirements?*

Hansen Slam-and-Take-up Lock

Hansen makes a complete line of body hardware and one-hand tackers.

Request Details

A. L. HANSEN MFG. CO.
5047 RAVENSWOOD AVE., CHICAGO 40, ILL.

HOW DOES IT GO?
WHEN A VEHICLE ROUNDS A CURVE AT HIGH SPEED, WHICH SET OF WHEELS TENDS TO LEAVE THE GROUND?
☐ THE INSIDE WHEELS
☐ THE OUTSIDE WHEELS

Answer on P. 104

AN IMPORTANT ANNOUNCEMENT

BY

THOMAS A. EDISON

INCORPORATED

Two great automotive products—Edison Spark Plugs and Edison Batteries, together with Edison Magnetos—are now united under one great name.

The manufacture and sale of these and other automotive products formerly made and marketed by the Emark Division of Thomas A. Edison, Incorporated and by Edison-Splitdorf Corporation will now be continued by the newly formed Automotive Division of Thomas A. Edison, Incorporated, with headquarters at West Orange, New Jersey.

The new Automotive Division will work hand in hand with Edison Laboratories to develop and perfect automotive products to meet the ever-increasing demand of owners and manufacturers.

Batteries, for the time being, will be distributed only in the Eastern part of the United States, but the other products of the Automotive Division will continue to be distributed nationally. For you, this logical combination will mean better service than ever before. And it will give you a line of products which you can profitably sell with the guarantee of *Performance as Great as the Name.*

BATTERIES • SPARK PLUGS • MAGNETOS • GLOW PLUGS • IGNITERS • CONNECTORS

AUTOMOTIVE DIVISION

THOMAS A. EDISON, INCORPORATED

WEST ORANGE, NEW JERSEY

"YOU CAN ALWAYS RELY ON AN EDISON"

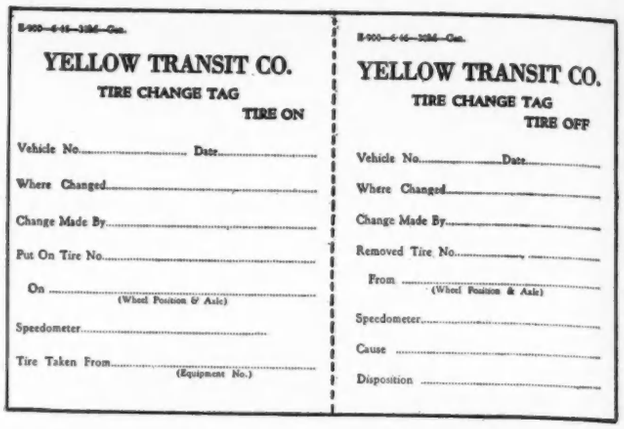
New Pitch on PM

(CONTINUED FROM PAGE 102)

prefix of the last number of the year. With this brand schedule, YT-6-2229 means that the tire is the 2229th tire purchased and put on in 1946. Similarly, YT-7-157 means the 157th tire put on in 1947.

When a tire is shipped out to a terminal to be installed we make a pencil notation of the shipment. As soon as it has been put on we receive a "Tire On" slip in original and duplicate, and also a similar set of slips for "Tire Off" change. (See cut.) Each driver carries a pad of these "Tire On" and "Tire Off" slips in triplicate, the original and one copy to come into the Oklahoma City terminal, the second copy to be retained in the book.

"Tire On" and "Tire Off" cards provide complete tire record until tire is discarded. They are kept in envelopes filed by tire number and vehicle number



When these slips come into our Oklahoma City terminal, the original slip is filed, using the tire serial number as the basis for filing. The duplicate slip is filed, using the equipment number as the basis for filing.

As each change is made, another set of slips is sent in, original and duplicate, and these are filed. These slips are filed in small envelopes in a master cabinet. This gets away from all posting until the tire has been discarded. When the tire is junked we pull the slips and make out a recapitulation record showing the mileage, period of time on what wheels and what equipment.

We figure 8000 miles a month on our tractor units. All new tires (when possible) start out on a front wheel of a tractor. We average from 10,000 to 15,000 on the break-in. Then the tire is moved back to a rear wheel and run to a semi-smooth recap stage. We have been averaging another 15,000 to 20,000 miles on this move-back, or second location. On 100 tires recently checked for the

(TURN TO PAGE 106, PLEASE)

GENUINE P&D IGNITION PARTS
it's not the woods...
but the game in it that counts!
And in ignition parts, it's not the outside cover but the inside works that count! That's why you can always count on P&D's one complete quality line of starting, lighting and ignition replacement parts and coils to give better service on your electrical or tune-up jobs.
Because P&D manufactures only one line, you can be sure we concentrate all the high quality of materials and workmanship into this one line. There's no secondary line, no holding back on quality.
P&D products point up your good work, please customers. They also help simplify ordering from one source and minimize inventory problems.
SEE FOR YOURSELF
Cut open a patented P&D Air Cooled Coil and compare it with other makes. Prove to yourself "it's not the outside container but the inside works that count."
1. One piece ribbed aluminum air-cooled can. The ribbed fins offer sufficient surface to dissipate heat generated in coil windings, assuring uniform performance during operation.
2. "Perma-Sealing" method makes for absolutely moistureproof sealed bakelite top.
3. Patented high tension insert eliminates soldered wire joint and prevents breakage by vibration.
4. High tension terminal with solid brass insert molded into cap assures moistureproof connection.
5. Secondary and primary wound with proper size wire and balanced for peak efficiency.
U. S. Patent No. 102001
P&D MANUFACTURING COMPANY, INC.
LONG ISLAND CITY 5, NEW YORK
STARTING • LIGHTING • IGNITION • REPLACEMENT PARTS
P&D MANUFACTURES ONLY ONE COMPLETE QUALITY LINE. ONLY THE FINEST MATERIALS AND WORKMANSHIP OBTAINABLE ARE EMPLOYED

● HOW DOES IT GO?

ANSWER . . . (To Question on P. 102)

The inside wheels have a tendency to leave the road. That is why a vehicle overturns to the outside, also why it is necessary to bank roads at bends.

(Another cartoon quiz on P. 106)

FOR 22 YEARS
Year in and Year Out
CENTRAL TRUCK LINES
DAILY & OVERNIGHT SERVICE
TAMPA ST. PETERSBURG LAKELAND OCALA
MIAMI W. PALM BEACH ORLANDO
ATLANTA MACON DAYTONA JACKSONVILLE

Firestone

TRUCK TIRES Have Given Us MORE MILES PER DOLLAR

CENTRAL TRUCK LINES

Starting in 1925 with one 4-cylinder truck, Central Truck Lines has enjoyed a sound and steady growth ever since. We now have 278 units in operation. Since our inception we have used Firestone tires and, year in and year out, we have received increasingly more tire miles per dollar.

SIDNEY ALLEN, President
Central Truck Lines

IN 1925, a one-truck line . . . today a 278-truck line . . . moving 350 million pounds of freight a year! That's the story of Central Truck Lines in Florida and Georgia.

To build up a trucking business like this requires sound, straight thinking . . . management that knows how to turn a good, steady profit . . . management that knows how to stretch every tire dollar by making it buy more tire mileage.

Thousands of leading truck operators, like Central Truck Lines, are stretching their tire dollars to the limit, by putting their equipment on the tires that go farther . . . last longer . . . cost no more . . . Firestone Transports.

Firestone Transports will do the same for you that they have done for thousands of other truckers . . . cut your tire costs to bed-rock. Give Firestone Transports a trial. Let them prove to your own satisfaction that they can give greater mileage at less cost.

Listen to the Voice of Firestone every Monday evening over NBC

Copyright, 1947, The Firestone Tire & Rubber Co.

FIRESTONE TRANSPORT TRUCK TIRES

New Pitch on PM

(CONTINUED FROM PAGE 104)

front wheel and rear wheel mileage, we averaged 39,942 miles per tire. A similar test on 100 tires was made 10 years ago, and showed an average of 64,726 miles.

On all tires with a good carcass we recap. This work is not done in our own shops. We are paying around $16.50 on 900s and $18 for 1000s and up. We have been getting 20,000 to 35,000 on both 1st and 2nd recaps; however, recently a very small percentage of our tires have been eligible for recapping.

We change a great many more tires for mating purposes than for any other reason. If a tire, on check, shows more than ½ inch in circumference difference, we remate. We have found this a very good maintenance policy and one that has brought us longer safe tire life.

All tires are checked twice each day for air pressure. This is a *must.*

During the war, except where recapping was a must due to the replacement trouble, recapping fell down for us. War tires never seemed to stop growing. Nine hundreds looked like ten fiftys in less than two months.

However, this situation is much better for us now and we hope before long to be back where we are recapping around 30 per cent again. For sure we will not recap any tire where even a section shows weakness.

Painting Costs Down

WE consider a well painted and lettered trailer one of the best advertisements we have. For this reason we try to have all of our units painted and relettered as often as needed. I say this because time varies a great deal on different jobs.

We keep two full time painters, one a sign painter. We figure the cost of painting a 28-foot trailer, without lettering, at $35. For lettering we add $15, making the total cost per trailer $50.

For the average trailer job it takes slightly less than 3 gal. of synthetic enamel at $4.50 per gallon. The rest is masking and labor.

By having our own paint department and a full time sign painter we figure we are saving 60 per cent on the work, and are able to budget the work to meet off-the-job trailer and tractor time.

END

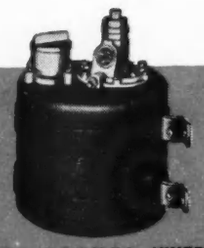
(Please resume your reading on P. 60)

TAKE THE DRAG OFF *Your* MOTORS

When winter comes, it brings another weight for heavy vehicles to pull . . . lube oils and gear greases chilled to stiffness on days too cold for even thin grade winter lubricants. Starts are battery-draining, time-wasting struggles, and shifting and steering call for real muscle. You can remove these cold weather burdens from your vehicles with the famous additive, MARVEL MYSTERY OIL.

Put MARVEL in crankcase oils, gasoline and all gear greases. You'll reap a four-fold benefit! . . . *low temperature flow* for quick starts and easy shifting and steering on the coldest days . . . *high film strength* that adds vital motor-protecting toughness to all lubricants . . . amazing *heat resistance* for safe lubrication of sizzling top cylinder zones . . . and thorough *detergent action,* famous throughout the industry for preventing oil drag resistance. Remember MARVEL when you lubricate or fuel up, and let its four-star action lighten the load of fleet maintenance problems for you all winter long! MARVEL is backed by the one guarantee that means positive results . . . more than 20 years of sensational performance among America's big-time fleets. EMEROL MANUFACTURING COMPANY, Inc., 242 W. 69th St., New York 23, N. Y.

MARVEL MYSTERY OIL



MARVEL HI-REV — the rapid motor tune-up that swiftly dissolves gum and sludge. A step stand-by for heavy duty de-sludging jobs.

The MARVEL INVERSE OILER—a compact, top cylinder, auxiliary lubrication system to motor Marvel Mystery Oil to critical upper cylinder parts according to engine needs.

WHAT DID HE SAY?

WHAT DID THE GOVERNOR OF SOUTH CAROLINA SAY TO THE GOVERNOR OF NORTH CAROLINA? HE COULD HAVE SAID THIS...

☐ MY STATE HAD THE NATIONS BEST HIGHWAY SAFETY RECORD LAST YEAR.

☐ MY STATE HAD THE NATION'S WORST HIGHWAY SAFETY RECORD LAST YEAR.

☐ MY STATE HAS NO SIZE OR WEIGHT LIMITATIONS ON TRUCKS.

Answer on P. 109

ATA Convention

(CONTINUED FROM PAGE 57)

pedal reserve remaining with a full application of brakes with vehicle stopped; on air and vacuum power brakes, ten per cent of brake chamber piston travel to be in reserve with a full application of the brakes on a stopped vehicle.

Recommendations for the maximum periods between lubrication and preventive maintenance inspections disclosed a wide difference of practice depending upon the severity of operating conditions. In order to insure that equipment is in safe and efficient mechanical condition it was concluded that lubrication of trucks and tractors should be regularly performed at periods less than 3000 miles of operations of less than three months. For trailers the maximum periods suggested were twice the periods recommended for power units. Maximum adequate periods between complete inspections of trucks and trailers was set at 20,000 miles or six months on trucks and tractors, with twice these limits for trailers.

The maximum permissible amount of off-tracking of full trailers was also the subject of extended debate. The committee recognized that full trailers which do not follow closely in alignment with their towing vehicle on straight, level roads constitute a hazard on the highway. Discussion brought out that articulated vehicle combinations seldom can follow directly in line, their position on the road being influenced by the length of the full trailer, the load and the crown of the pavement. It was finally concluded that any full trailer in adequate operating condition should not off-track more than 6 in. towards the center of the road nor more than 12 in. to the right side of the road.

Progress reports of development work on mufflers for heavy duty engines indicated that fair results in noise suppression were being attained, but that present muffler construction was inadequate from the standpoint of service life. Further experimental work was authorized, with additional investigation into the possibilities in stainless steel, Inconel and special porcelain enamels.

Cooperation in the Winter Driving Hazards Test Program of the National Safety Council during the coming winter was approved. It appears likely that the Winter Driving tests will include a study of the interrelation of front wheel brakes and steering on curved paths on smooth ice. Such tests on combinations of vehicles have not been made previously.

Julius Gaussoin, president of Silver Eagle Co., Portland, Ore., chairman of the National Equipment and Maintenance Committee, was chairman of the meeting.

Safety & Operations

A new ATA Manual on Driver Selection and Supervision was reviewed

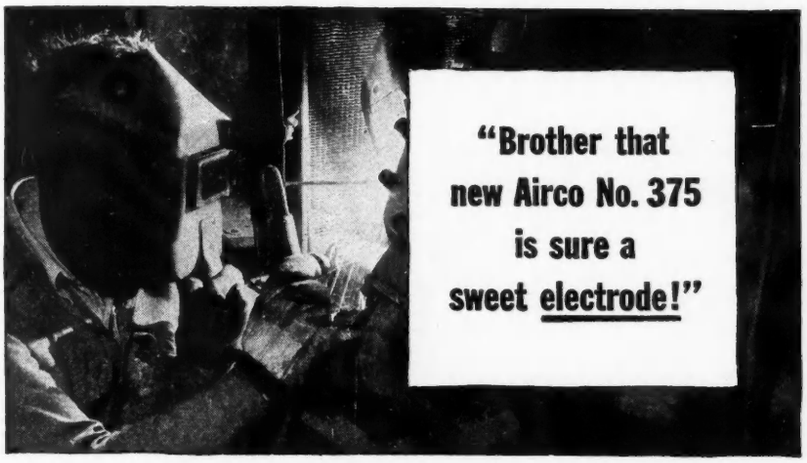
(TURN TO NEXT PAGE, PLEASE)

● WHAT DID HE SAY?

ANSWER . . . (To Question on P. 106)

South Carolina last year had the poorest showing of any state in motor vehicle mileage death rates. It had 16.5 deaths per 100,000,000 vehicle miles.

(Another cartoon quiz on P. 112)



"— the best we have found on the market for making machinable cast iron welds"

. . . says B. A. Canning, owner of Montgomery Welding Service (Jersey City, N. J.), a specialist in automotive repair —"all out" praise for the NEW Airco No. 375.

This all-position, AC-DC electrode produces machinable welds of high tensile strength and great ductility.

Smooth flowing, thin spreading, this exceptional NEW electrode will take a multiple pass without separating or pulling away from the cast iron. It is recommended for welding cracked or defective cylinder blocks, heads, transmission housings, clutch plate fingers, and similar automotive repair jobs.

But try this NEW electrode yourself — AT OUR EXPENSE! Send in your request for a FREE sample to the Airco sales office or authorized dealer nearest you — or, if you prefer, use the coupon below.

Mail Coupon Today For Your FREE Sample of Airco No. 375!

AIRCO **AIR REDUCTION**

Offices in All Principal Cities
Plus a Nationwide Dealer Organization

CJ
Air Reduction
60 East 42nd St., New York 17, N. Y.
Please send me a FREE sample of the new Airco No. 375.
Name_____
Company_____
Address_____
City_____ Zone_____ State_____

ATA Convention

(CONTINUED FROM PAGE 109)

in a progress report before the meeting of the Safety and Operations Section. After extended debate the draft of the manual was accepted with certain revisions.

A committee was appointed to propose a new name for the Section in accordance with similar action taken by other sections to make the names of special industry groups more indicative of their position as industry organizations rather than staff divisions.

The meeting also agreed to participate in a joint spring meeting with other sections of the ATA.

W. J. Rellaford, Asbury Transportation Co., Los Angeles, chairman of the Safety and Operations Section, presided at the meeting.

Chester Smith, Roadeo winner (left) and Don Streeter, Reo general sales manager, congratulate James Culver who with August Reolle had made transcontinental run in 3 days, 21 hours

Roadeo Winners

Not all of the convention was devoted to paper work and speeches. Over 5000 spectators witnessed at a city park the selection of three truck drivers as the best in the world in the finals of the National Truck Roadeo, sponsored by ATA.

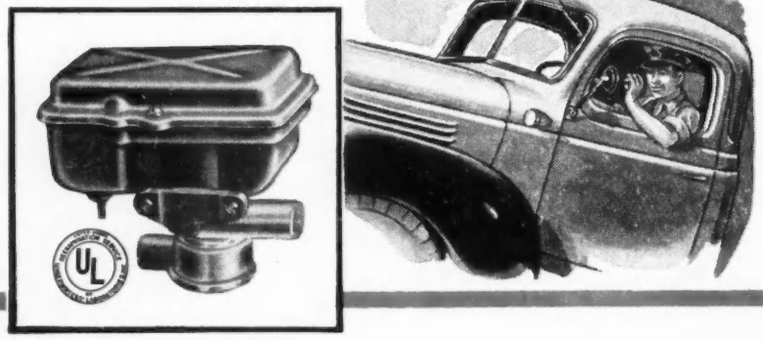
Selected from among 53 competing state champions, Alex Adamski, driver for the George F. Alger Co., Chicago, was named champion in the straight truck class; Charles Zimmerman, tractor-semi-trailer driver for the Cushman Motor Delivery Co., Chicago, ran off with the title for the third time, and Chester W. Smith, Reliable Transportation Co., Los Angeles, was named winner in the truck and full trailer class. (See cut, page 74.)

Tank Truck Volume Up

At a meeting of the Tank Truck Carriers Conference, C. Austin Sutherland, secretary-manager, reported that tank trucks now are handling a greater volume of business than ever before, topping even the wartime peak. He presented figures to show they transported a 21 per cent greater volume during the first six months of this year than during the same period last year and declared this volume is two and a half times greater than the gallonage hauled by all railroads a year ago.

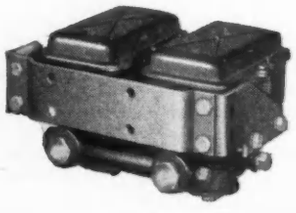
STEWART-WARNER
Electric Fuel Pump

Keeps 'em rolling . . .
Keeps 'em climbing



- Ends vapor-lock and fuel pump failure.
- Operates only when needed.
- Helps maintain tough schedules.
- Insures quick starting in any weather.
- Delivers a minimum of 15 gallons of gas per hour.
- Reduces operating costs.
- Available for 6 or 12 volt installations.

110-DUAL PUMP



Dual fuel pump installations are recommended where gasoline mileage is less than 5 or 6 miles per gallon. Each pump in a dual unit may be wired to a separate switch. By using only one pump in a dual unit, 30% greater fuel delivery will result. The idle unit acts as a booster as well as reserve pump. STEWART-WARNER CORPORATION, 1876 Diversey Parkway, Chicago 14, Ill.

1947 Roadeo champs are, l to r: Charles Zimmerman of Cushman Motor Freight (tractor-trailer), Chester Smith of Reliable Transfer Co. (truck and full trailer), and Alex Adamski, of Geo. F. Alger Co. (straight truck)

Insurance Problems Acute

Many van operators with "reasonably good" safety records were being "arbitrarily" refused renewal of their long-standing insurance policies or forced to accept "terrific" increases in premiums, James F. Rowan, executive secretary of the Household Goods Carriers' Conference, told his group.

"The situation is serious," he said, adding a request had been made for an investigation, leading to relief from the situation.

Private Carrier Fund

The Private Carrier Conference voted to establish a schedule of dues to raise a fund to defray legal expenses in connection with the Lenoir Chair case and similar proceedings which now are pending or which might arise in the future.

Under the schedule adopted, members of the Conference will pay annual dues of $10 if they operate fewer than 20 trucks, and $20 if they operate 20 or more vehicles.

The conference membership reelected Fred B. Hufnagel, Jr., of the Sun Oil Co., Philadelphia, as chairman.

A. E. Cudlipp, of Lufkin Foundry and Machine Co., Lufkin, Tex., was elected vice-chairman, and John A. Hassey, City Service Oil Company, Boston, treasurer.

Army's Affiliation Plan

At a luncheon session, General Leavey outlined the trucking industry's vital role in national defense. He told the delegates about the Army's Affiliation Plan under which units of the Organized Reserve, are affiliated with commercial associations, corporations, etc., known as "sponsors." Under this plan, the Army obtains the advantage of the technical knowledge of commercial organizations for the formation of such organizations as railway battalions, truck battalions, various types of truck companies, signal battalions, and hospitals. The plan is not entirely new. It was tried out in a small way in the first World War and again in the second, when the results achieved by the 516th and 517th Truck Companies, sponsored by ATA, were excellent. "By getting a program under way now, it should be possible to create a reserve structure which will operate smoothly under the stress of war," the General said.

"Under the program now in progress the commercial organization sponsoring a military unit secures favorable publicity, is able to make a definite contribution to national defense and to secure commissioned and non-commissioned rank in the Reserve for many of its officials and employees. This plan does not require

(TURN TO NEXT PAGE, PLEASE)

STEWART-WARNER
Motor-Mile Tachometer

Points the way to greater hauling profits

Save up to 25% on fuel and oil, and increase the life of your trucks by giving your drivers this visual check to help them keep within the Economy Range . . . those speeds at which an engine operates with peak efficiency.

Drivers simply keep engine speeds between the two stationary red pointers on the face of the tachometer dial.

The Stewart-Warner Motor-Mile Tachometer also records all engine mileage—whether idling or traveling—providing an accurate record to show when engine maintenance is needed.

Save money on your hauling operations and increase the life of your equipment by installing a Stewart-Warner Motor-Mile Tachometer on every truck in your fleet.

For complete details and prices, see your local Stewart-Warner jobber today, or write to STEWART-WARNER CORPORATION, 1876 Diversey Parkway, Chicago 14, Ill.

ATA Convention

(CONTINUED FROM PAGE 111)

the civilian organization to go to any expense."

The sponsor is requested to sign an affiliation agreement, but this affiliation agreement is really "a mutual expression of good faith, active interest and confidence," rather than a contract, and is intended to express the voluntary plans of the parties with respect to their participation.

As a result of the General's dramatic appeal, ATA's Board of Directors pledged full support to the development of the Army Affiliation Plan for Transportation Corps units.

Officer Line Up

The Board of Directors approved a new plan of elections which created the post of chairman of the board; provided the president would succeed to that post automatically and could not succeed himself as president for a second consecutive term; and provided the first vice president would be assumed to be first in line for succession to the presidency. Ted V. Rodgers thus becomes the first chairman of the board and will preside at the board's annual session in 1948.

Additional officers elected by the Board of Directors are: First Vice President, H. D. Horton, Associated Transport, Inc., Charlotte, N. C.; Second Vice President, Henry E. English, Sproles-Red Ball Lines, Inc., Dallas, Tex.; Third Vice President, C. J. Williams of the Hillside Transit Co., Milwaukee, Wis.; Fourth Vice President, Leland James, Consolidated Freightways, Inc., Portland, Ore.; Secretary, Chester G. Moore, Central Motor Freight Association, Chicago; Treasurer, Charles P. Clark, Columbia Terminals Co., St. Louis.

The above, with the following Vice Presidents of ATA Conferences, will comprise the Executive Committee:

Walter F. Carey, Michigan, Automobile Transporters Conference; J. Albert Kramer, Pennsylvania, Contract Carriers Conference; James P. Clark, Pennsylvania, Film Carriers Conference; J. Wallace Fager, Pennsylvania, Household Goods Carriers Conference; W. W. Akers, Jr., North Carolina, Irregular Route Common Carriers Conference; Philip Smith, Illinois, Local Cartage Conference;

(TURN TO PAGE 114, PLEASE)

"Cleveland"

Door Locks & Door Checks

● "Cleveland" Irons, including Door Locks and Door Checks, are called upon to perform the hard job on bodies . . . subjected to constant rough wear over every type of road. Down through the years they've succeeded because we've never ceased to improve them.

No. 2385
The Wedge
DORLOK

Provided for medium sized bodies. Easy action, rattle-proof. Keeps doors tight always. For Right and Left Hand Doors—2 and 3-way.

● Today "Cleveland" Drop Forgings cover almost every item used in the Defense Program.

No. 2392-A
Heavy Pattern Cadmium Plated Lock

Made with heavy, round adjustable rods. A durable spring prevents road shock from jarring lock open.

● "Cleveland" Die Castings from Zinc or Aluminum are made to Special Blue Print.

Send for catalog 22 B I covering the "Cleveland" stock line of Truck Body Forgings . . . or catalog 18A covering "Cleveland" Automobile Forgings.

The Cleveland Hardware & Forging Co.
Established 1881
3264 East 79th St. Cleveland 4, Ohio

TRUE OR FALSE ?

IF A U.S. GOVERNMENT TRUCK IS INVOLVED IN A HIGHWAY ACCIDENT, THE GOVERNMENT IS LIABLE ON THE SAME BASIS AS A PRIVATE CITIZEN FOR PROPERTY DAMAGE AND DEATH OR INJURY CLAIMS.

☐ TRUE ☐ FALSE

Answer on P. 114

RUGGED, PRECISION-ENGINEERED PERMITE PARTS "Keep 'Em Moving"

. . . at *Low* maintenance cost!

Don't let truck breakdowns eat up your fleet operating profits. When durable, accurately engineered Permite Replacement Parts are used, you have positive assurance that reconditioned trucks, buses or passenger cars will "stand up and take it" under the toughest, most punishing service conditions.

Fine quality PERMITE Parts are as easy to install as they are hard to wear out. Their dependable, definitely superior performance has made them preferred original equipment in many of the world's leading cars and trucks . . . and preferred Replacement Parts everywhere.

To keep your fleet in continuous operation at minimum maintenance costs, replace with dependable PERMITE Parts. See your Jobber for your requirements.

ALUMINUM INDUSTRIES, Inc.
CINCINNATI 25, OHIO

REPLACEMENT PARTS

PISTONS	VALVE GUIDES	WATER PUMPS	CYLINDER SLEEVES AND ASSEMBLIES	TIE-ROD ENDS	MUFFLERS AND CLAMPS
PISTON PINS	VALVE STEM KEYS	WATER PUMP REPAIR KITS	SPRING SHACKLES	BOLT SETS	TAIL PIPES
VALVES	VALVE SPRINGS			BUSHINGS	

ATA Convention

(CONTINUED FROM PAGE 112)

R. C. Williams, Kansas, Oilfield Haulers Conference; Fred B. Hufnagel, Jr., Pennsylvania, Private Carriers Conference; Harry F. Chaddick, Illinois, Regular Common Carriers Conference; Frank B. Mutrie, Massachusetts, Tank Truck Carriers Conference.

A special committee to study the question of state association dues was appointed by the Board of Directors. The Committee will be comprised of state association managers and state association presidents. Each of the 13 ATA regions will be represented on the committee. It will be the function of the committee to decide on state association dues schedules to realize at least $50,000 per year. Old dues will meanwhile remain in effect and new assessments will be retroactive to January 1, 1947.

END

(Please resume your reading on P. 58)

Use CLAW Tire Chains and stop *worrying about winter driving.* For CLAWS have a knife-sharp wedge of extra steel that bites in at the point of traction. You get a positive grip that minimizes the dangers of stalling and skidding on snow or ice covered highways. CLAW links are made of a special, hardened alloy steel...have 20% more steel in every link...give extra mileage...extra traction...greater safety.

CLAW Tire Chains should always be at hand. Avoid delays...danger...embarrassment. Drive with confidence... drive with CLAWS.

Columbus-McKinnon Chain Corporation, General Offices: Tonawanda, N. Y., Plants at St. Catharines, Ont., Can. and Vereeniging, So. Africa.

CLAW
TIRE CHAINS
for
PASSENGER CARS, TRUCKS and BUSES

Fleetman's Library

THE DEPENDABLE DIESEL, a magazine containing 50 typical applications of Cummins Diesel engines. This second 1947 issue may be obtained from any Cummins dealer or by writing directly to the Cummins Engine Co., Inc., Columbus, Ind.

PROTECTIVE COATING CATALOG, a 12-page catalog giving complete details on the chemical and physical properties, application instructions and other pertinent data on Amercoat protective coatings. Available from Amercoat Div., American Pipe and Construction Co., Box 3428, Terminal Annex, Los Angeles, Cal.

NEW BULLETIN, a 12-page publication illustrating the various types of presses available, their accessories and their uses. Tables list models and specifications. Air-Hydraulics, Inc., 401 Broadway, New York 13, N. Y.

LEAF SPRING CATALOG, 4-Q listing all popular leaf springs and main plates for cars and trucks. Contains make and model listings for 1928 to 1947 inclusive. William & Harvey Rowland, Inc., Tacony and Lewis St., Philadelphia 24, Pa.

EBERHARD CATALOG, a 72-page publication listing body hardware available from Eberhard Mfg. Co., Cleveland 4, Ohio. Limited copies available.

ROOT BULLETIN 30-50 a new pamphlet describing the Root Reversible Snow Plow. Available from the Root Spring Scraper Co., Kalamazoo, Mich.

BULLETIN NO. 25, the second of a series of 8-page bulletins containing news items about the most recent developments in the engineering applications of Meehanite castings. Published by Meehanite Metal Corp., Pershing Square Bldg., New Rochelle, N. Y.

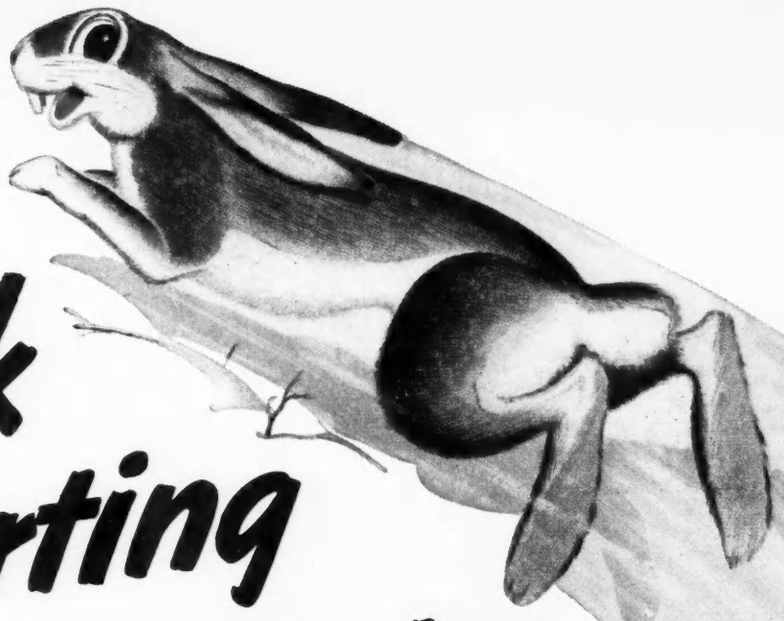
HIGHWAY STATISTICS, Summary to 1945, a 98-page booklet in which is presented historical information of general interest on the subjects of motor fuel, motor vehicles, highway-user taxation, highway finance and mileage. Most of information is found in statistics carried back over periods from 20 to 50 years. Write Supt. of Documents, U. S. Government Printing Office, Washington 25, D. C. Price, 35 cents a copy.

CATALOG NO. 200, a 76-page, 3-color brushing catalog, designed to simplify selection of the best brush for the individual job. Presents in addition Osborn's complete line of power, paint, varnish and maintenance brushes. Write The Osborn Mfg. Co., 5401 Hamilton Ave., Cleveland 4, Ohio.

● TRUE OR FALSE?

ANSWER . . . (To Question on P. 112)

True. The Federal Tort Claims Act enacted by Congress in 1946 makes the Government liable on the same basis as a private citizen for highway accidents.



Quick Starting all Winter

FOR YOUR ENTIRE FLEET

● Rabbit-fast starts, even in coldest weather—that's Casite. It retards congealing of oil . . . lets motors spin over rapidly and *go*.

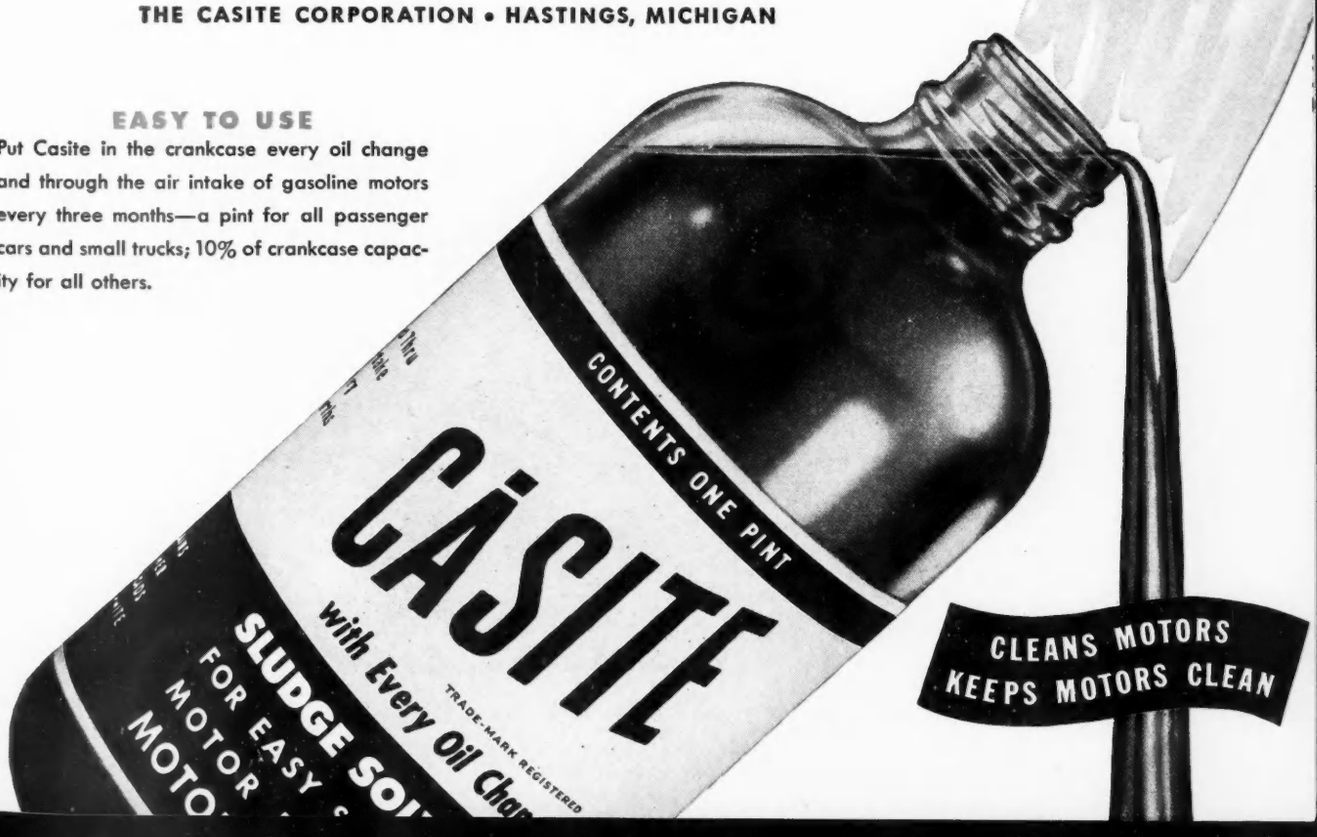
Casite improves lubrication and reduces engine wear—makes any motor run better, no matter what kind of motor oil is in the crankcase.

Many of the largest fleets use Casite in every motor. Try Casite in *yours* —for quick starting this winter and better performance all-year-round.

THE CASITE CORPORATION • HASTINGS, MICHIGAN

EASY TO USE

Put Casite in the crankcase every oil change and through the air intake of gasoline motors every three months—a pint for all passenger cars and small trucks; 10% of crankcase capacity for all others.



Truck Appearance Key to Training

(CONTINUED FROM PAGE 47)

gory beyond the basic physical examination required of all new employees.

They are (1) visual acuity; (2) questions and answers (written); (3) road driving test (both initial and supplementary during the probation period), and (4) instruction in the *type* of vehicle to be driven.

Just a word about each of these. In checking old drivers as well as new it is surprising to note the number that do not have proper basic vision. Accordingly, we have insisted on 20/20 natural or corrected vision in each eye as a basic requirement for driver employment and we recheck vision noted on the physical examination report, using the age-old simple wall chart as a guide.

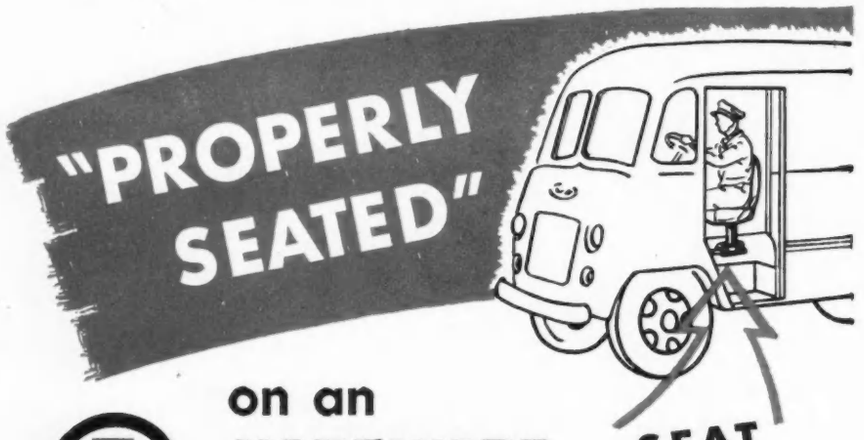
The questions and answers are a carefully worded written examination that is designed to test an applicant's mechanical knowledge, "know-how," of handling a vehicle, ability to drive from a standpoint of preventive maintenance, and his knowledge of safe driving rules and procedures.

Some of the questions in our written examination are reproduced at the beginning of this article. We believe they are both searching and indicative of the man's knowledge of these basic principles. An answer sheet is provided on which the applicant places a mark over each correct answer and a punched score card placed over the answer sheet provides an almost instantaneous rating. Errors are individually discussed with the applicant and a re-examination at a later date is given if deemed appropriate. Tests among older drivers and key shop personnel have revealed that, almost without exception, a man's rating on this examination is directly proportionate to the man's driving ability or efficiency as noted over the years of his employment.

Mere possession of an operator's license does not make a man a good driver. The road driving test is equally important. We have set up a standard procedure which can be accomplished preferably on a specially laid-out area or possibly on any given driving course over city streets. It is designed to provide a standard method for judging a driver's knowledge of sound driving practices and his ability to properly operate and handle a truck or car under typical driving conditions. A negative scoring sheet has been drawn up providing for deductions in such categories as starting procedure, stopping procedure, obedience to signals, turning, parking and general ability. (See page 47.) Prospective drivers are rated on their initial test and on subsequent test to note progress in deficiencies.

These driving tests are always given in vehicles with which the men are familiar so that their normal driving habits and practices will not be changed because of lack of knowledge or "feel" of the vehicle's controls. For we also believe emphatically that a good passenger car or light truck driver cannot properly operate a heavy duty or specialized type of truck or a tractor-trailer until he has had considerable prac-

(TURN TO PAGE 120, PLEASE)



on an EberHARDWARE SEAT PEDESTAL

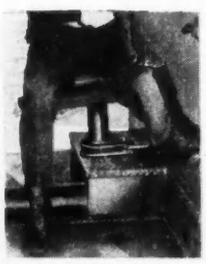
No. 575716A

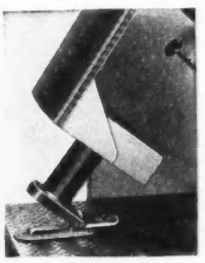
AX and C models also available with greater overall heights and circular floor plate on C.

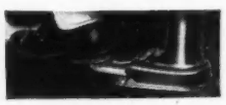
• Primarily for cab-over-engine bodies, and restricted space driving compartments. Eberhard pedestals adjust both vertically and horizontally. Complete swivel action. Automatic locking action in driving position. Instant release.

No. 575717 "Pedaloc" Seat Pedestal

Swivel action spider permits driver to swing out from driving position. Convenient pedal release. Spider locks when swung back.







Pedestal tilts forward to clear objects passing through door.

Slotted spider permits 3 inch fore and aft adjustment of seat cushion. Write TODAY for complete information and specifications on the Eberhardware seat pedestal line.

EBERHARD Long Run TRUCK BODY FITTINGS

EBERHARD MANUFACTURING CO.

Division of the Eastern Malleable Iron Co. 2734 TENNYSON ROAD, CLEVELAND, OHIO

Multiple-Ply Cover . . .

Much Longer Wearing than on Passenger Car Belts

SPECIAL Heavy-Duty Compound

RAYON CORDS

Of Extremely High Tenacity

For more than a year now, Gates Truck and Bus Belts have been built with RAYON CORDS — and are the ONLY Truck Belts in which you get the extra strength and extra service life of Rayon Cords. You *know* how greatly Rayon Cords increase the life of Truck *Tires!* Why not have this same advantage in your Truck *BELTS?*

The Patented CONCAVE SIDE

Like all Gates Belts, the Gates Truck Belt is built with the famous life-prolonging Concave Side—a Gates Patent.

Make *Sure* That the Truck Belt *You* Get is Marked with this (T)

Look for the letter "T" on the belt itself—as well as on the label—of every belt you buy for truck service. "T" means that the belt has been specially engineered for TRUCKS and BUSES. You can be sure of getting the belt designed for this more demanding service only by seeing to it that you are delivered belts which bear this letter "T".

*REG. U.S. PAT. OFFICE

Actual Records of Biggest Truck Belt Users Say—

50% to 80% Longer Wear!

Gibson Lines — 90% LONGER SERVICE

Sacramento, Calif.
"... gives 90% longer service than even your pre-war belt."

Midland Motor Bus Co. — LASTS 75% LONGER

University City, Mo.
"... lasting 75% longer in very tough service."

Jerrel Motor Co. — 50% TO 60% MORE SERVICE

Jarrel Texas
"... giving 50% to 60% more service—far the best we've used."

Lexington Railway System — 70% INCREASED LIFE

Lexington, Ky.
"We have increased belt life about 70% with your Truck belts."

All American Bus Lines — 80% LONGER WEAR

Chicago, Ill.
"We are getting 80% longer wear than any other belt ever gave us."

Bloomingdale Dairy — CUTS COSTS IN HALF

Newark, N. J.
"Since adopting Gates Truck Belts we are using only half as many belts as before."

Beard Machine Shop — 75% MORE SERVICE

San Angelo, Texas
"We're getting 75% more service than from any other belt we ever used."

THIS IS A Gates PRODUCT

*REG. U.S. PAT. OFFICE

THE MARK OF *SPECIALIZED* RESEARCH

The GATES RUBBER CO., Denver, U. S. A.

World's Largest Makers of V-Belts

Truck Appearance Key to Training

(CONTINUED FROM PAGE 116)

tice manipulating and operating the vehicle so that he can make allowance for the difference in size and construction when stopping and starting, when turning, when meeting and passing other vehicles, and when backing up and parking. Hence, the third of our "must" items includes proper instruction, supervised by competent personnel, in the type of vehicle the man will be required to operate and to which he is subsequently assigned. Also, whenever drivers are changed from one type of vehicle to another, they receive instruction.

Secondary Requirements

IN addition to these "must" items are a number of secondary requirements for driver selection. They are now in operation at several of our larger plants. These include additional eye tests for field of vision, depth of perception and other standard Keystone visual safety tests. The eye testing apparatus now available is a matter of common knowledge and need not be discussed further. We believe the results obtained from this searching probe of eye conditions, however, is well worth the investment in equipment.

A part of every driver meeting is devoted to good driving. Sometimes it's a talk, sometimes a "movie," sometimes a demonstration such as the very effective brake reaction detonator. Most of you are probably familiar with this device. It consists of a detonator attached to the front bumper and operated by an observer in the right seat. The driver is instructed to stop when he hears the report. When the charge goes off, it forces a powdered capsule to the roadway making a mark. When the driver hits the brakes, another charge goes off automatically, making a similar mark on the roadway. Measurements can be taken between the first and second mark to get reaction time and between the second one and the stopping point to get braking distance. Even the oldest drivers are more than surprised at the distance required to stop vehicles at various speeds.

Another step in a continuing program is what we call skill developing exercise. These consist of individual training and testing procedures as pre-driving checks, operation of controls (particularly on specialized vehicles), best starting and stopping techniques, double clutching, and parking (using stanchions whenever possible).

Truck Appearance

OUR second major objective, maintaining the appearance of our trucks, comes perhaps closer to the central key to our whole driver training program than any other single item. This may seem to be an extraordinary statement but our experience has demonstrated its accuracy.

During the past two years we have added quite a few new vehicles to our fleet and have been rebuilding and repainting a great many more. When one of these vehicles is considered to be in perfect or near perfect condition from an appearance

(TURN TO PAGE 124, PLEASE)

WABER TUBES *are the Nearest Trouble-Free Inner Tubes that Money can buy.*

1. **WABER TUBES are the Nearest 100% Pinch-Proof Nearest 100% Puncture-Proof**
2. **WABER TUBES are the Nearest 100% Protection against dangerous Blow-outs.**
3. **WABER TUBES are the only Premium Inner Tube with a complete line for Passenger cars and Trucks.**
4. **WABER TUBES will, in the long run, justify their use many times over.**

Equip Your Trucks and Cars with Waber Tubes To-day!

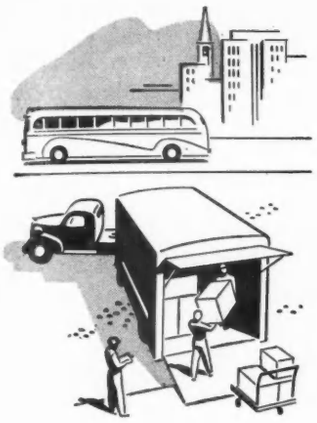
Your Profit from longer tire wear and maintained schedules will begin to-morrow!

GUARANTEE

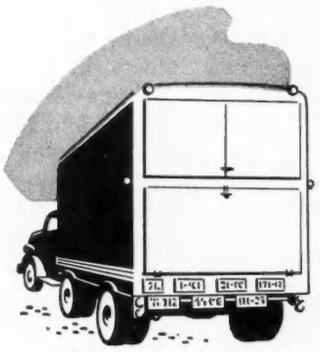
The new, improved patented WABER innertube is guaranteed not to go flat within two years from the date of purchase due to road accidents such as cuts, punctures, rim pinches or blowouts. Should any such road accident result in a flat tire, a new tube will be supplied by any dealer handling WABER tubes or by the WABER Company, pro-rating the replacement charge on a monthly basis for the service rendered.

• Specify WABER
• See Your Dealer
• Write Us Direct

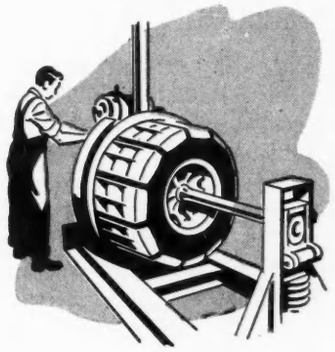
THE WABER COMPANY
1824 W. 74th ST., CHICAGO 36, ILL.



THERE'LL BE GOOD NEWS AHEAD for fleet operators when manufacturers adopt truck wheels fabricated from Alcoa Aluminum Castings as standard equipment. These strong aluminum wheels will help you carry more payload on the same sized rig with no increase in gross tonnage.

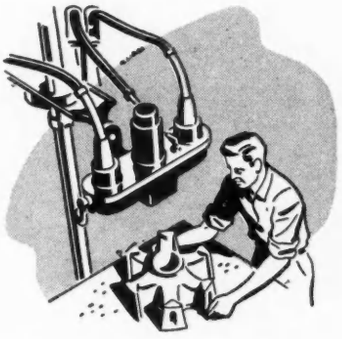


NO NEED TO LOSE PAYLOADS! Aluminum wheels will help meet state weight laws with bigger loads but the same gross weight. You'll be able to cut taxes, too. How much will it save you in yearly license fees if you cut wheel weight in two? Lower unsprung weight will mean sizable savings in tire costs and general fleet maintenance costs.



SHARP CURVES AT 50 MPH! Alcoa laboratories put wheels made of Alcoa Aluminum Castings through a test that duplicates stresses of sharp turns at high speeds. The big machine grips the tire and spins the wheel while the shaft is pulled off center to create side strain. This and other tests mean that your trucks will carry more load on aluminum wheels with no sacrifice of safety.

ON THE ROAD, as well as in the laboratory, wheels made from Alcoa Aluminum Castings have come through *millions of miles* of actual runs. Aluminum wheels have proved in operation to be as strong as wheels of heavier metals!



QUALITY CONTROL assures conformance to rigid Alcoa standards. X-ray inspection, torsion and fatigue testing, assure dependable service from every Alcoa Aluminum Casting. They're backed by 59 years of light metals know-how.

DESIGN HELP. Alcoa stands ready to assist you in making designs for cast aluminum wheels that will meet your requirements. Sales offices in principal cities, or write ALUMINUM COMPANY OF AMERICA, 2139 Gulf Bldg., Pittsburgh 19, Penna.

ALCOA

Savings and Safety with truck wheels made from

ALCOA ALUMINUM CASTINGS

Truck Appearance Key to Training

(CONTINUED FROM PAGE 120)

standpoint, a little round red sticker is placed on the upper right hand corner of the vehicle and the truck is referred to, in company parlance, as a "red ball" job. We have avoided use of the red ball as an indicator of mechanical condition because of the possible inference that other vehicles of the fleet are not in safe mechanical condition. This is not so. All are safe mechanically. But these "red ball" jobs are something special from the appearance standpoint and mechanical perfection goes along with it.

They are assigned to drivers on a seniority or merit basis and it is surprising to note the pride that they take in them. One driver who had been with the company many years took one look at his reconditioned and repainted old truck, instinctively put his hand to his chin and said, "Guess I better go home for a shave." That is typical of the reaction, not because the drivers are unaccustomed to having repainted or new trucks but rather because they now feel it adds to their prestige to operate a fine appearing vehicle and receive credit for helping to keep it that way.

Then, once the appearance of the vehicle has been brought to virtually perfect condition, it is our aim to keep it that way. This part of the program includes constant reminders to the drivers to avoid even the smallest accidents, by insistence that the smallest scratch be promptly noted on a vehicle damage report. Daily inspection by shop supervisory personnel is the enforcement means. Drivers know that by making prompt reports, every consideration will be given, even though they may be at fault. They also know that if they don't report, they're automatically in trouble. Drivers are also responsible for keeping the inside of their vehicles clean. The obvious result is a definite increase in esprit de corp and a corresponding decrease in vehicle damage.

Backing up driver participation in this part of the program is a definite responsibility on the part of shop supervisors to keep the vehicles clean at all times and to repair and repaint damages, wherever possible, as soon as they occur. The response from the sales and advertising departments to this part of the program is enthusiastic and they help to promote it by emphasizing the importance of good driving and truck appearance in their work with drivers on customer relations.

We also have a driver complaint form for the reporting of mechanical defects and we insist that these be cleared by the shop foreman before the vehicle is released next day.

Driving Technique

OUR third objective pertains to good driving technique and is directed toward lower operating costs, fewer accidents and good-will through courtesy. The accomplishment of this objective naturally overlaps to a certain degree the work performed in connection with initial driver selection—namely, road testing and re-testing. But it goes further.

(TURN TO PAGE 127, PLEASE)

WITH Johnson

ADJUSTABLE TAPPETS

for FORD V-8's and MERCURYS (85-100 H. P.)

You can't go wrong when you install **JOHNSON** Adjustable Tappets for Fords! You make more profit and gain more satisfied customers.

Designed and produced by "Tappet Specialists," suppliers of tappets of all kinds to America's leading engine builders, these tappets are easily and quickly adjusted without fitting of valves — with cylinder heads in place. Special spanners, included with each set of tappets, leave both hands free for quicker, yet more accurate adjustments, and the **JOHNSON** self-locking screw maintains this exact setting for many miles of smooth, quiet, full powered engine performance.

CALL YOUR N.A.P.A. JOBBER TODAY

Johnson PRODUCTS INC.
MUSKEGON, MICHIGAN
"Tappets Are Our Business"

Truck Appearance Key to Training

(CONTINUED FROM PAGE 124)

As stated previously, part of every Driver's Meeting is devoted to good driving. Our third objective (lower operating costs, fewer accidents, and the building of good-will) is primarily accomplished by appealing directly to the drivers to do the best job of driving they know how to do, even though it takes them a little longer to do their work.

All of us have some poor driving habits. Most of these are of the "take a chance to save a few seconds" type, and pointing out these poor driving practices to drivers will not correct them unless their attitude toward driving has been developed to the point that they have a real desire to improve their driving.

Our approach to the drivers is direct. We frankly tell them that our objective is to have and maintain a finer appearing fleet than others operating in the same areas and that we want the general public to think of our drivers as being better than those employed by other fleets. We put it up to them that this can only be accomplished with their complete cooperation; that we can only maintain a fine appearing fleet if they will avoid accidents, keep damage to the vehicles they operate at a minimum, and follow good driving practices at all times.

Finally we emphasize "defensive driving." A defensive driver was once defined by the Navy Department as follows: "One who makes allowances for the lack of skill and the lack of knowledge on the part of the other fellow—who recognizes that he has no control over the unpredictable actions of other drivers and pedestrians, nor over conditions of weather and roads, and who, therefore, develops a defense action against all these hazards. He concedes his right of way and makes other concessions to avoid collision. He is careful to commit no driving errors himself and is definitely alert to avoid the accident traps and hazards created by weather, roads, pedestrians and other drivers."

All of our drivers have been exposed to this definition together with concrete methods by which it can be applied to their daily driving habits.

Coordination

THE fourth of our objectives—the coordination between departments—is accomplished through team play. As in all fleets where drivers are primarily salesmen and accountable to the sales department, it is imperative that as transportation men we work closely with sales. We frequently make such concessions as may be necessary to adhere to their wishes. In return we ask for real cooperation, particularly in the driving qualifications of new applicants.

Keeping top management informed of our aims and progress provides the most effective key to the program.

Packaged Program

FINALLY, we have packaged the entire program in the form of a loose-leaf binder with mimeographed instructions and printed forms. These binders are *not* offered to a given plant until a representative from headquarters has explained them in person, is prepared to spend about

(TURN TO NEXT PAGE, PLEASE)

KEEP THE "BIG BABIES" ROLLIN'

with RUSCO Heavy Duty Fused Fabric Clutch Facings

CLUTCH facings take a lot of punishment on big-tonnage trucks and heavy-laden buses. That's why it pays to use the famous RUSCO *Heavy Duty* Fused Fabric Clutch Facings . . . the clutch facings proved and improved on trucks, jeeps, ducks and all manner of Army vehicles The extra strong, woven asbestos base of these *heavy duty* facings is impregnated with wear-resistant solids and moulded under tremendous hydraulic pressure. The result is an "interlock" of ingredients which gives these burly facings exceptionally high mechanical strength, torque for all requirements, resistance to heat, oil and moisture, and a long and trouble-free life under severest operating conditions.

RUSCO ★★ ENGINEERED ★★ BRAKE LININGS CLUTCH FACINGS

"THE STANDARD OF THE INDUSTRY"

The RUSSELL MANUFACTURING CO., Middletown, Conn.

Truck Appearance Key to Training

(CONTINUED FROM PAGE 127)

a week in demonstration with key personnel and drivers, and can arrange to visit the plant regularly. In this way we assure understanding and the best possible cooperation. As stated at the outset, our plans are flexible with only a few "musts" and a great many "desirables." Our aim is to make as many of the provisions work as possible in any given location. For some sections with but a few trucks, only the basic points can be followed. For others, with big concentrations, all can and have been adapted with excellent results.

We should like particularly to acknowledge the assistance given to our program by Mr. Amos E. Neyhart, Institute of Public Safety, Pennsylvania State College, and Robert I. Gayley, safety director, Supplee-Wills-Jones Milk Co., Philadelphia, Pa.

END

(Please resume your reading on P. 48)

"There's nothing to argue about, Joe—there are the facts"

A Servis Recorder Chart Promptly Settles All Arguments —Even Better, it Prevents Them!

As an experienced truck operator, you realize that nothing impairs driver morale more than getting into arguments over yesterday's work record. They are invariably bad, because in the end the driver is still convinced that he is *right.* Therefore, *prevent them*—don't let them come up at all!

Fortunate is that truck manager who has *Servis Recorder* charts before him on his desk—or better yet, hanging on their proper pegs on the wall, *right up where everybody can see them.*

He can stop any argument before it gets started by simply pointing up to the charts and saying quietly, "Boys, there's the answer—*each truck wrote its own record.*"

The *Servis Recorder* shows you every time the truck stood idle *and how long.* Write for the full story. The Service Recorder Co., 1375 Euclid Avenue, Cleveland 15, Ohio.

Shows
BUSY TIME
IDLE TIME
OVERTIME
ETC.

The Servis Recorder
Tells Every Move Your Truck Makes

Chrome Plated Rings

(CONTINUED FROM PAGE 42)

that he installed a set of porous-chrome rings in a model 270 G.M.C. engine and, after 40,000 miles, failure of another part made it necessary to disassemble the engine. Upon disassembly, he could find a maximum of only .001-in. wear on the cylinders, and both oil consumption and fuel consumption had been below normal with this engine.

Mr. Rizzio also pulled down a 1942 Ford Truck engine that had been operated for 50,000 miles, pulling extremely heavy loads between Los Angeles and San Francisco. Here, too, the maximum cylinder wear that could be found in any cylinder was .001-in. again, oil consumption and fuel consumption were below normal. In this engine, at 40,000 miles, he found from 115 to 120 lb. compression pressure, whereas, the normal pressure at this mileage, on his other units, is about 95 lb.

The Truck Leasing Division of the "Driv-Ur-Self" System, Inc., located in Minneapolis, Minn., reports as follows:

"We have found that the ring life is considerably longer than the previous rings we have been using. The engines definitely have more power, better performance, and show oil economy over a greater period."

Ring Breakage Stopped

THE Glendenning Motor Ways, Inc., who operate about 165 tractors and trucks, which travel approximately 5½ million miles a year covering the states of Minnesota, Illinois, Wisconsin, North and South Dakota, reports as follows:

"We have found, when using porous-chrome rings, that we have eliminated ring breakage entirely in our model 4-71 diesels. Also, we have reduced sleeve wear about 30 per cent to 40 per cent. Performance and service have been about 75 per cent better than with the rings previously used."

Mr. Hewey S. Ewald of Ewald Brothers, located in Minneapolis, Minn., who operates a fleet of International and Divco trucks in door-to-door milk delivery service, reports as follows:

"We have installed many sets of

(TURN TO PAGE 130, PLEASE)

50 years of good brakes

American Brakeblok

TRADE MARK REG. U.S. PAT. OFF.

THE SAFETY BRAKE LINING

AMERICAN Brake Shoe COMPANY

AMERICAN BRAKEBLOK DIVISION
DETROIT 9, MICHIGAN

Master stocks in 39 strategically located warehouses. Jobbers everywhere maintain complete assortments.

Chrome Plated Rings

(CONTINUED FROM PAGE 128)

porous-chrome rings in our International and Divco trucks during the past two years. We find very gratifying results in the way of lower oil consumption, longer ring life and much less cylinder wall wear.

"The writer has driven a 1942 Chrysler, New Yorker, a distance of 80,000 miles since installing porous-chrome rings. The oil consumption at present is one quart per 1000 miles. The total mileage on the car is 140,000 miles. It still has plenty of power, speed and performance—a record worthy of our commendation."

A factory branch of one of the large truck manufacturers reports as follows:

"We have been using porous-chrome rings 100 per cent in all of our engine overhaul work. Inasmuch as these engines are delivered to our customers, we do not have accurate records as to performance, but we have noticed that since we changed to the porous-chrome type of ring, we have complete customer satisfaction and a decided decrease in cylinder wear when the engines come back for overhauling again."

One of the largest fleets engaged in general hauling in the state of Michigan reports:

"We have just completed reassembling an International K-11 which had previously been equipped with porous-chrome rings. The mileage, since the porous-chrome rings had been installed, was 80,000. Completely satisfactory service has been experienced throughout the entire mileage, and all parts are in excellent condition.

Cylinders Outwear Shaft

A CONTRACTOR in Arizona reports: "It has just been necessary for us to disassemble one of our engines, because of a bearing failure, that is used in construction work under extremely severe dust conditions. The engine had been rebored and porous-chrome rings installed 40,000 vehicle miles before it was torn down. The silt in which this engine had operated was so bad that the crankshaft had to be replaced where it had been worn away by the dust and dirt. Much to our surprise, we found that the cylinders had a maximum of .002-in. taper, even under the dusty operating conditions."

Another operator, located in Wisconsin, reports:

"We installed porous-chrome rings in 12 different engines for the purpose of determining their effectiveness. We find that the engine mileage between overhauls has increased from approximately 45,000 miles to 75,000 miles when using porous-chrome rings."

A public utilities company, operating in Maryland, reports:

"By using porous-chrome rings, we get an improvement in oil consumption, a 25 per cent increase in mileage between overhauls and cylinder wear has been reduced to about one sixth of normal.

An express company, operating in a large eastern city, reports:

"With all of our engines, it was previously necessary to tear down the engines at the end of one to two

(TURN TO PAGE 132, PLEASE)

Hundreds of profit-minded fleet owners are cutting truck or bus repair time practically in half by Hypressure JENNY steam cleaning motors, chassis, parts, etc., before inspection or repair. Besides increasing road time, JENNY steam cleaning "ups" pay loads by removing from 50 to 400 lbs. of accumulated dirt from vehicles . . . lessens fire hazards . . . saves as much as 40% on labor-repair and maintenance; and often prevents costly road failures by exposing cracked or worn parts which might otherwise be unnoticed. Add to these savings the advantages of faster, better cleaning of repair equipment, tools, grease pits, runways, floors, walls, windows, etc., and you can readily see why Hypressure JENNY is a profit-making investment.

Why not ask your Automotive Jobber for full particulars about Hypressure JENNY—or write direct for illustrated folder. No obligation.

HYPRESSURE JENNY DIVISION

HOMESTEAD VALVE MANUFACTURING CO.

P. O. BOX 90 CORAOPOLIS, PA.

1700 GALLONS RIDE "FREE"

IN THIS 6200-GALLON HOOBLER-EQUIPPED TANKER

Bigger loads are hauled at less cost!

PROBABLY the largest automotive tanker ever built for commercial use (pictured below) is doing an efficient, money-saving job on a Hoobler Undercarriage.

This tanker's capacity is *1700 gallons more* than a conventional tanker, but the Hoobler Undercarriage operates so efficiently that *less* power is needed—upkeep is *lower* and truck hours *shorter*—than a conventional tanker's. Actually, 1700 gallons ride "free" on every full-gallonage haul.

Here are more Hoobler advantages that help you cut operating costs—increase trucking profits. A Hoobler-equipped trailer takes tight turns *in a radius less than its length;* minimum tire scuffing; frangible loads ride safer because flexible, multiple support absorbs practically all road bumps; easy to drive—forward or backward.

Simple in design and construction, quickly inspected and serviced, designed for use with standard brakes, axles, wheels and tires. For all over-the-highway trailers 28 feet in length and up. Find out how you can haul maximum loads safer, quicker, at lower cost. Write for complete information. The Union Metal Mfg. Company, Canton 5, Ohio.

UNION METAL

DESIGNERS AND PRODUCERS OF STEEL PRODUCTS SINCE 1906

Builder of The Hoobler Undercarriage

Chrome Plated Rings

(CONTINUED FROM PAGE 130)

months of service because of severe operating conditions. In many cases, it was necessary to rebore the engines at this time. With porous-chrome, we find that we are getting four to five months of service out of the engines and, almost invariably, the engines can be reringed without reboring because of the reduction of cylinder wear."

While this article deals primarily with the use of porous-chrome rings in truck engines, the operations of bus operators are somewhat similar and from this type of operation we can learn additional facts.

A large bus operator, located in New Jersey, reports:

"We have recently disassembled a 24-A White bus engine at 230,000 vehicle miles and we found a maximum of cylinder wear of .0015-in. During its entire life, the oil and fuel consumption were better than normal.

Pensacola Transit Inc., located in Pensacola, Fla., reports as follows:

"With the application of porous-chrome rings in our 6 MZR Waukesha engines, we have increased the life between major overhauls by 40 per cent. In our 100 hp Ford engines, this life has been increased by 50 per cent."

Another bus operator, located in Georgia, reports:

"For the purposes of conducting a test, we installed porous-chrome rings in a bus on April 4, 1947. The mileage on this set to date is 17,800. It is out-performing any other engine of the same make that we have. The average miles per added quart of lubricating oil in this fleet is 55, and, in the last four months of operation, this vehicle has given an average of 198.4 miles per quart."

Fuel Mileage Up 7%

ONE of the most surprising things about porous-chrome rings is the reduction in fuel consumption that has been obtained when these rings are used. Most of the reports that have been mentioned above deal in generalities, but one large bus operator in the South supplied these monthly fuel consumption figures:

	Porous-Chrome Type Rings	Other Type Rings
1st Month	5.32 mpg	5.07 mpg
2nd Month	5.32 mpg	5.09 mpg
3rd Month	5.32 mpg	4.85 mpg
4th Month	5.40 mpg	4.95 mpg

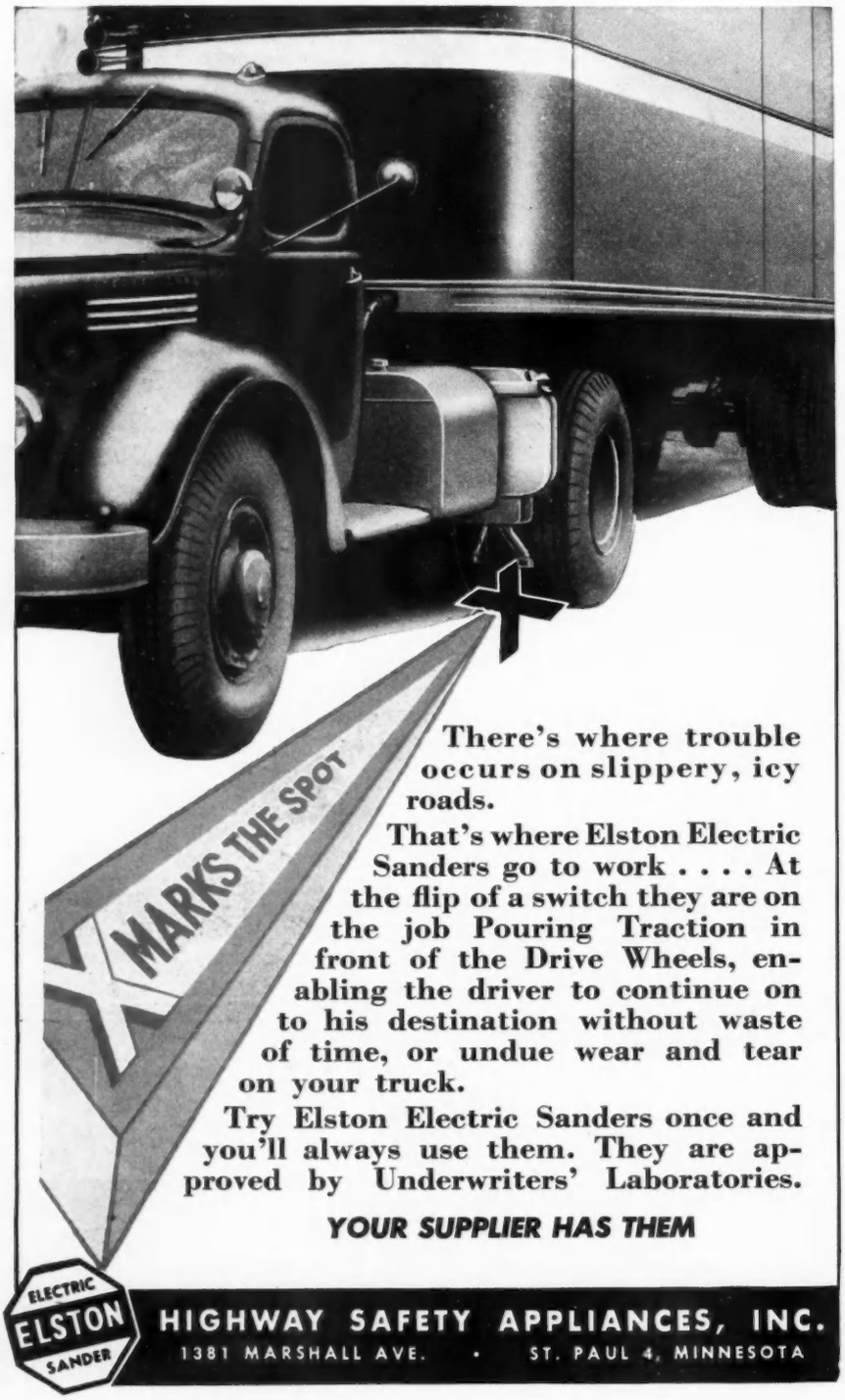
From these figures, it can be readily seen that the miles per gallon of fuel has been increased by 7 per cent. This is a definite advantage to any operator of a fleet of vehicles, particularly when coupled with longer engine life and less cylinder reboring, when engine overhaul is necessary.

While, so far, we have dealt primarily with the reports of operators of vehicles, we can also report that the truck manufacturers are showing great interest in porous-chrome piston rings. They have been approved as the standard service ring by Federal and Reo. Other truck manufacturers have these rings under consideration and may announce their adoption by the time this is published.

How Porus Finish is Obtained

THE results obtained by the use of porous-chrome rings are so out-

(TURN TO PAGE 134, PLEASE)


X MARKS THE SPOT
There's where trouble occurs on slippery, icy roads.
That's where Elston Electric Sanders go to work . . . . At the flip of a switch they are on the job Pouring Traction in front of the Drive Wheels, enabling the driver to continue on to his destination without waste of time, or undue wear and tear on your truck.
Try Elston Electric Sanders once and you'll always use them. They are approved by Underwriters' Laboratories.
YOUR SUPPLIER HAS THEM
ELECTRIC ELSTON SANDER
HIGHWAY SAFETY APPLIANCES, INC.
1381 MARSHALL AVE. • ST. PAUL 4, MINNESOTA

When you're glad you have a Snap-on

Snap-on's Blue-Point
VALVE COMPRESSORS
remove the stiffest valve springs easily . . . safely

Here is one of the most practical lifters on the market today. Universal in its scope, this valve spring compressor works efficiently on many different makes of cars.

Check these important features: It's fast and easy to use because the handle is in the most convenient place for simple, downward lever action . . . it's light in weight . . . and it has stronger, slimmer, channel-formed, adjustable jaws for all types of springs. In addition, the handle locks at any position by use of the sliding ring on the lower part of the frame.

For easy, safe work on the stiffest valve springs, ask the Snap-on man for the Blue-Point, "U"-type valve lifter.

SNAP-ON TOOLS CORPORATION
8026-L 28th AVE. KENOSHA, WISCONSIN
International Division: Kenosha, Wis., U.S.A.

Chrome Plated Rings

(CONTINUED FROM PAGE 132)

standing that some descriptive information, in addition to that heretofore published (most recently in the September, 1947, issue), concerning their manufacture appears to be desirable.

The rings are made of cast iron, and are chrome-plated by the Van der Horst process, developed during the war, which produces the porous finish. The surface characteristics of a ring so plated are shown in Fig. 1.

It will be noted that the total chrome plate thickness on the ring is approximately .005-in., also, that on the cylinder contacting surface of this chrome plate, there are millions of tiny particles projecting out and millions of tiny holes or pores. These particles and holes are microscopic in size so that the particles are not large enough to scratch or tear either the rings or the cylinders.

This porous surface is accomplished by first plating the ring for approximately 8-10 hours and then reversing the direction of the current, for approximately 1 hour. This reversal of the direction of the electric current breaks down the surface of the chrome forming the porosity.

When this ring is placed in the cylinder, oil collects in the tiny pores providing lubrication during the first few revolutions of the engine. As soon as the piston begins to move up and down, the tiny projecting particles of porous-chrome begin to wear off and act as a mild hone creating two highly polished, perfectly mated surfaces on all of the piston rings and the cylinder wall so that the rings are operating under the most ideal cylinder conditions.

The chrome which wears off is in such small quantities that no trace has ever been found of it in any bearings, lubricating oil, or in the cylinder wall. It is believed that, after it has accomplished its purpose of seating all of the rings on the pistons to the cylinders and polishing the wearing surfaces, it goes out through the exhaust.

Fig. 2 shows a 500 magnification of a porous-chrome piston ring after it has been used in an engine. By comparing this with Fig. 1, it will be noted that the chrome, after the porosity has been removed, is extremely bright, hard and shiny, holding the wear to a minimum.

The creation of these two perfectly mated, very highly polished surfaces and the reduction in blowby—caused by the quick seating of the rings in the cylinder wall, is what accounts for the reduction in ring and cylinder wear. Once these highly polished surfaces have been created, the tendency to scuff, score or wear has been removed and, therefore, long life is realized.

The improvement in oil and fuel consumption is obtained by maintaining the perfectly matched and mated surfaces over a long period of time and, while oil consumption will not be any lower initially than it is with regular rings, the porous-chrome rings will maintain the same oil consumption figure over a very much longer period of time.

F-88 High Strength Iron

THE second wartime development which has contributed to the ex-

(TURN TO PAGE 138, PLEASE)

WESCO
There is extra service engineered into WESCO TIRE CHAINS with balanced degrees of hardness, toughness and tensile strength—the hardness to resist wear, the toughness to withstand shock and extra strength that assures full chain life.
That is why experienced fleet operators prefer WESCO TIRE CHAINS—fabricated from chain made for tire chains by the tire chain specialists.
Check with your local WESCO Distributor.
WESTERN CHAIN COMPANY
1801 W. BELMONT AVE. CHICAGO 13, ILLINOIS

NEW DELCO *Heavy-Duty* BATTERIES

Delco heavy-duty batteries are scientifically designed to combat the stresses caused by heavy discharge demands, high-rate charging and excessive heat.

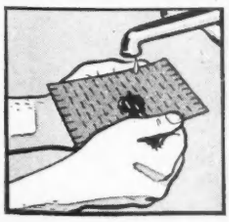
Long years of laboratory research and road-testing were required to overcome the main causes of heavy-duty-battery failure. Active area was increased greatly to meet modern demands. New materials were put to use. New principles of construction were employed.

The result is a battery that will outlast, outperform, outclass other commercial batteries. With many new features for greater dependability and convenience, the new Delco heavy-duty battery will meet your needs *as they have never been met before.*

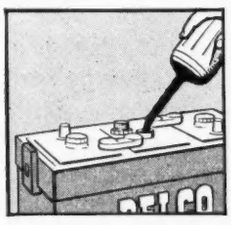
You Get All These Important Features

IN THE NEW HEAVY-DUTY DELCOS

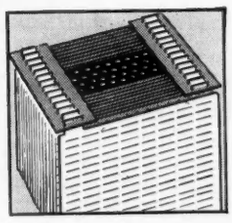
INCREASED ACTIVE PLATE AREA—More plates per cell, larger plates per cell, through more efficient plate design! That means less work for every square inch of working surface—greater discharge capacity, greater charging capacity.



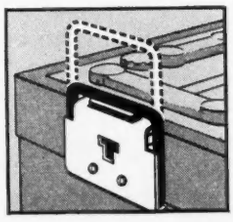
MICROPOROUS RUBBER SEPARATORS—Resist destructive effects of heat, high gravity, overcharging. Increased porosity speeds up power-producing chemical reaction. Make the new Delco heavy-duty batteries longer-lived, more dependable.



SPLIT-RING ACID-LEVEL INDICATOR—Permits quick visual inspection. Indicates when electrolyte is at proper level. It speeds service, helps prevent overfilling. New Delco heavy-duty batteries require less frequent service and can be serviced faster.



SPECIAL PLATE-STRAP SHIELDS—Shields under each plate strap and across top of element reduce danger of short-circuits caused by displaced active materials, distortion of plates. Also safeguard against hydrometer damage to separators during servicing.



"DISAPPEARING" STEEL HANDLES—Drop flush with top of case when not in use—do not interfere with inspection and servicing. Special keyways in handles simplify installation of hold-downs.

UNITED SERVICE MOTORS

DELCO BATTERIES
A UNITED MOTORS LINE
Available Everywhere Through
UNITED MOTORS DISTRIBUTORS

Delco-Remy
DIVISION, GENERAL MOTORS CORPORATION

Chrome Plated Rings

(CONTINUED FROM PAGE 134)

cellent results which have been secured with the porous-chrome rings, is F-88 High Strength Piston Ring Iron. This iron was originally developed for use in the high output aircraft engines, as top ring breakage occurred very frequently, because of the extremely heavy pressures that are used in these engines.

Operators of vehicles in commercial use have been worried with top ring breakage for years. The use of F-88 high strength piston ring iron is our answer to this problem.

This high strength iron is manufactured by means of centrifugally casting the iron into sleeves, or pots, from which rings are cut. Figs. 3 and 4 show the difference in the material between standard piston ring iron and F-88 under 250 magnification. It can readily be seen that it is an entirely different material even though it is still cast iron. The physical properties of this material compared with standard piston ring iron are as follows:

STANDARD CAST IRON	
Avg. Tensile Str.	40,000 psi
Avg. Elastic Modulus	14.0 x 10-6
Comparative Impact Str.	2.5 in-lbs.
Hardness (Rockwell B)	97-107

F-88 IRON	
Min. Tensile Str.	80,000 psi
Min. Elastic Modulus	20 x 10-6
Comparative Impact Str.	10 in-lbs.
Hardness (Rockwell C)	24-30

The tensile strength of F-88 iron, which is a little higher than double that of standard iron, means that the material has a much greater strength and resistance to breakage, so that it can be counted upon to function in grooves where normal rings would break very quickly.

The elastic modulus of the F-88 material is approximately one and one-half (1½) times that of standard iron, which means that the F-88 material has about 1½ times its ability to retain its shape and tension.

The impact strength is exactly four (4) times that of standard iron which means that it has the ability to resist a blow such as might be caused by detonation four times as great as one that would cause breakage in standard piston ring iron.

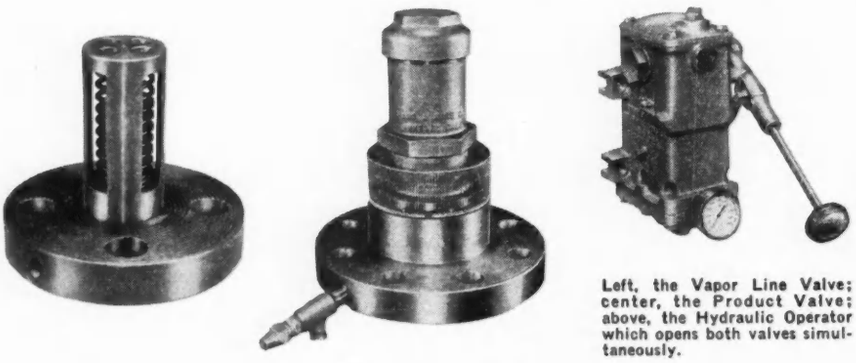
The Rockwell hardness of these materials is given in two different scales, but essentially the hardness is comparable and there is no appreciable difference.

The use of the porous-chrome finish on F-88 material, the manufacture of which was started early in 1947, means that in addition to securing reduction in cylinder wear, over-all reduction in fuel and oil consumption, longer engine life, and that top ring breakage has been eliminated.

END

(Please resume your reading on P. 44)

S&J *Introduces Two New* **L.P. GAS VALVES**



Left, the Vapor Line Valve; center, the Product Valve; above, the Hydraulic Operator which opens both valves simultaneously.

Shown here are two new L.P. Gas Valves which every L.P. Gas Distributor will welcome, as they provide the same safety to L.P. Gas depot storage and delivery equipment, which petroleum marketers have so long enjoyed in the handling and transportation of gasoline.

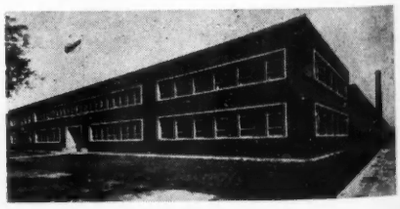
Because of the high vapor pressures of L.P. Gases, special valves and operators had to be designed to handle liquids which return to their gaseous forms instantly upon exposure to the atmosphere. The ¾" Vapor Line Valve is inserted into the vapor line which connects the vapor space of the vessel being filled to the vessel being discharged so as to equalize the vapor pressures in both and permit ready flow of the liquid. The product valve is installed in the discharge line in the interior of depot storage tanks, and inside each compartment of an L.P. Gas truck tank. Both valves are opened simultaneously by the hydraulic operator and close by spring tension when the pressure is released. Fusible plugs inserted into the hydraulic line at strategic points will melt at 165°F. and automatically release the pressure and close all valves instantly in the event of fire. Your inquiries are invited.

SHAND & JURS CO.
BERKELEY, CALIFORNIA

NEW YORK CHICAGO HOUSTON LOS ANGELES SEATTLE

SHAND & JURS

IHC Research Building



Exterior view, International Harvester Co. Manufacturing Research Building, 5225 South Western Boulevard, Chicago. This building houses the company's manufacturing research department

℞ FOR LOWER HAULING COSTS . . .

BUDD WHEELS

When you see this label on a wheel you know it offers many exclusive features which help to lower your hauling costs. Cold tapered disc, ball cap nuts, the only complete line with advanced rims.

It identifies the wheel for buses, trucks and trailers which has led the field for 26 years—outsells all other makes combined.

It stands for engineering superiority which continuously pioneers in the improvement of wheels.

And it assures you an organization of distributors and dealers conveniently located and thoroughly skilled . . . which is qualified to advise you how to cut hauling costs and prescribe the right wheels to do it. The Budd Company, Detroit.

To all our customers, distributors, dealers and other friends—a Merry Christmas and a happy, prosperous 1948.

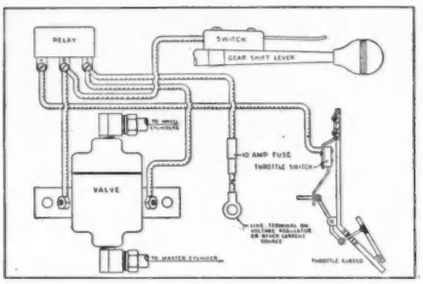
New Products

(CONTINUED FROM PAGE 61)

P79. Brake Holder

A hydraulic brake holder featuring manual application and automatic release has been announced by the Penrose Products Co., Newark, N. J.

The electrically activated valve mechanism may be mounted at any point between the master cylinder and the brake cylinders and is designed to hold whatever pressure is generated by the master cylinder until released. It is equally effective going up or down grade or on the level



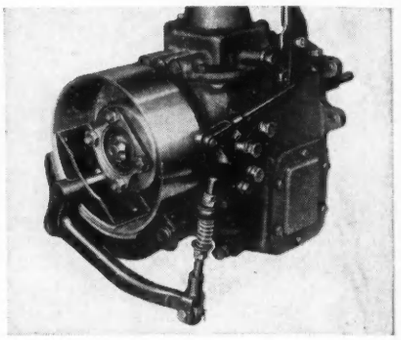
and has found ready acceptance as an anti-creep device for cars equipped with fluid drive.

The electrical circuit of the device operates through a relay. To activate the valve it is merely necessary to ground the circuit instantaneously by means of a small contact switch on the gearshift handle. A second contact switch attached to the foot throttle linkage releases the system as the throttle is opened. The hand switch overrides the foot switch permitting the valve to be actuated regardless of throttle movement provided the hand switch is held down.

Use Free Postcard For More Details.

P80. Duo-Grip Brake

To meet demands for improved braking on farm tractors and emergency braking on heavy-duty trucks and buses, The Timken-Detroit Axle Co. has announced commercial production of the new Timken "Duo-Grip" Brake.



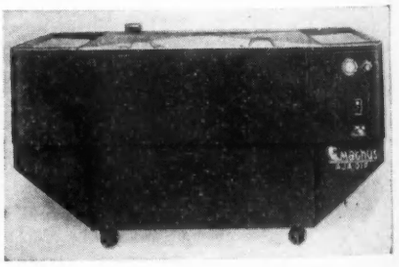
This new brake is available now in a complete range of capacities from 6 in. to 14 in. diameters. Operating parts consist only of two shoes, located on the inner and outer surfaces of the brake drum, which are actuated through a lever as shown.

In operation, the inner and outer shoes are drawn toward each other simultaneously, applying pressure to the drum on both its interior and exterior surfaces. When the brake lever is released, both shoes release their hold on the drum and permit it to rotate freely between them without drag.

Use Free Postcard For More Details.

P81. Cleaning Machines

The Equipment Division of the Magnus Chemical Co., Inc., of Garwood, N. J., has recently re-designed and increased with new models its line of Magnus Aja-Dip cleaning machines.

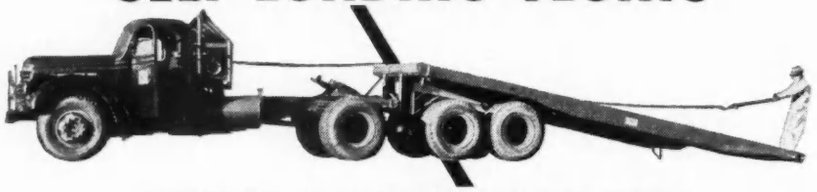


The outward appearance has been streamlined, with grouped control and instrument panel and attractive finish. The drive mechanism is entirely located in the front of the machine for easier access and servicing.

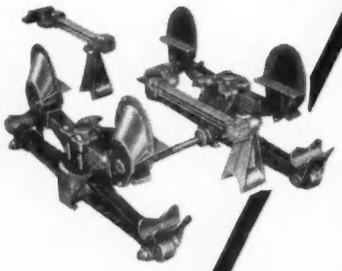
(TURN TO PAGE 142, PLEASE)

HOBBS

SELF-LOADING FLOATS



ASSURE A LEVEL LOAD RIDE WITH HENDRICKSON TANDEM



The Hendrickson equalizer beam and large ball and socket joints compensate for all road irregularities—this simplified feature:

- eliminates pitching and tossing.
- stops costly "load" shifting.
- gives maximum flexibility without distortion.

HENDRICKSON TANDEM

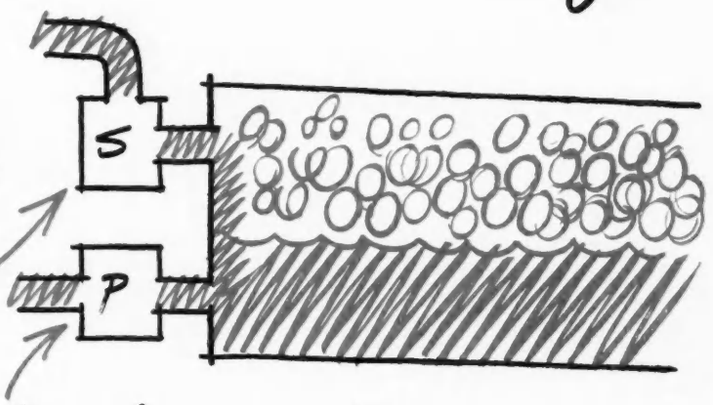
HENDRICKSON MOTOR TRUCK CO.
CHICAGO 15, ILLINOIS

"Follow the Leader"

LUBE MEMO

Air bubbles can wreck bearings

In our dry-sump system, air sucked through scavenging pump makes lube foam.



When foam gets into pressure pump, it loses suction, pumps insufficient oil to bearings...!!

Rep. says RPM DELO Diesel Engine Lubricating Oil stops foaming—How?

1. *Special compounds in RPM DELO Oil minimize bubbles.*
2. *Lab. tests prove bubbles that form break up immediately*

Phone RPM Delo Oil Rep.

DIESEL ENGINE RPM DELO LUBRICATING OIL

STANDARD OF CALIFORNIA • San Francisco, Calif.
THE CALIFORNIA COMPANY • Denver, Colo.
THE CALIFORNIA OIL COMPANY • New York
STANDARD OF TEXAS • El Paso, Texas

Use postage-paid card inserted on page 61 for free information on advertised products

New Products

(CONTINUED FROM PAGE 140)

The machines are available in 13 sizes and types from the Midget type handling a few pounds of work to the Jumbo type handling 2200 lb at a time. They may be used with either hot or cold cleaning solutions.

Use Free Postcard for More Details.

P82. Undercoating

A new rubberized chemical product, designed to protect the underbody of both new and used vehicles has been developed by Nox-Rust Chemical Corp., Chicago. The protective coating, Nox-Sound, prevents corrosion of fenders, running boards, and other parts from inside out, and it eliminates rattles, squeaks and vibrations, and cushions the noise and abrasion from stones, gravel, sand and cinders thrown up against the body by the wheels, according to the manufacturer.

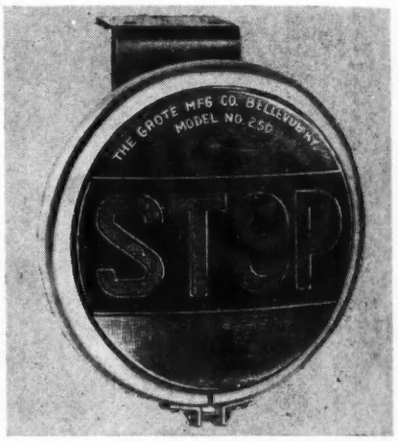
The film, applied by spraying over the entire underbody, is said to be impervious to water and salts—such as calcium chloride—and other corrosive chemicals encountered on streets and highways which accelerate rusting of fenders and running boards from underneath. Once applied to any vehicle, it forms a thick elastic skin to resist the continual beating from the elements. It acts as a rubber cushion against abrasion, vibration and road noise.

Use Free Postcard for More Details.

P83. Safety Lights

Two new types of stop light and a new dome light with Plexiglas lens are the latest products announced by Grote Mfg. Co., Inc., Bellevue, Ky.

Grote No. 250 Stop Light is designed for external mounting to the rear or under the rear of the vehicle. It may be bolted to flat surfaces, or fastened underneath body with angle bracket. Its size complies with requirements of various states, measuring 7¼ in. diameter overall with lens 6¾ in. diameter and exposed area 6¼ in. in diameter.



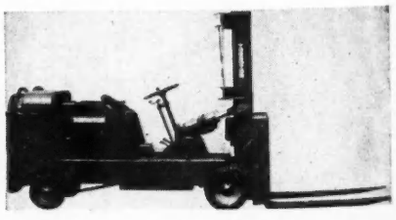
For recessed type mounting, Grote No. 250-F Stop Light (illustrated) is offered. The body of the lamp fits into the vehicle body, with the lamp face flush. The door of the lamp is hinged to the body, and the entire unit is mounted by means of four screw holes through the flange.

The new dome lamp—Grote No. 230—features molded Plexiglas lens for reduced breakage hazard and maximum light intensity. The lamp is rectangular in shape—2¾ in. x 5¾ in.—and is designed for overhead or side panel installation.

Use Free Postcard For More Details,

P84. New Towmotor Lift

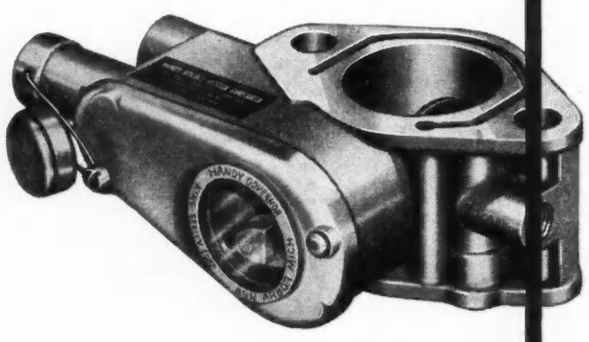
A new fork lift truck, Model LT-90, having a lifting capacity of 15,000 lb, has just been announced by Towmotor Corp., Cleveland.



The new model is similar in most respects to the nine other Towmotor fork lift truck models and may be used in conjunction with the various Towmotor fork lift truck accessories wherever special applications require.

Use Free Postcard for More Details.

(TURN TO PAGE 242, PLEASE)



This GOVERNOR

Anger, fatigue, grief, or joy—any one of these can temporarily transform a reasonably good truck driver into a serious traffic menace. This very thing has happened too often to ignore the danger of these human reactions.

The Handy Vari-Speed Governor, however, is not human, is never emotionally involved, but always comes to the assistance of the human driver who is. When your truck fleet is equipped with the Handy Governor, you have good reason to expect fewer accidents, and you will also save on tires, engine repairs, lubrication and brake maintenance.

The Handy Governor costs but a small fraction of what it will save you in its first year of operation.

HELPS KEEP the Emotional Driver OUT OF TROUBLE

KING-SEELEY CORPORATION
ANN ARBOR MICHIGAN

PLANTS IN ANN ARBOR · GRAND RAPIDS · YPSILANTI

Washington Runaround

(CONTINUED FROM PAGE 64)

Treasury Tax Study

The Treasury Department is expected to release within a very short time its study of excise taxes on transportation of property and persons. This study is one of a series of Treasury projects which are designed to provide information for the guidance of Congress. Other studies, which will not be released until some time next year, will cover such subjects as depreciation and changes that might be necessary in automotive excise schedules.

Size & Weight Road Test

The Committee on Economics of Motor Vehicle Sizes and Weights of the Highway Research Board met in Washington on Dec. 2 at which time it approved the proposals of its Test Committee for road tests on the Pennsylvania Turnpike and another route paralleling the super-highway. Tests are scheduled to begin next spring as soon as weather conditions permit. Equipment is already being assembled.

Front Brake Skid Tests

The Ground Rules Committee of the Committee on Winter Driving Hazards of the National Safety Council also met in Washington on Dec. 2 and set up rules for the front-wheel brake tests on ice scheduled for late January at Clintonville, Wis. The committee went into such subjects as vehicle and driver requirements, testing equipment, and the general ground layout.

PRA Brake Research

The Advisory Committee on Motor Vehicle Brake Research to the Public Roads Administration held its first post-war meeting in Washington on Nov. 21. The meeting was largely organizational in character, although a proposed program for continuing the work started before the war was also discussed.

This Committee was formed just prior to the war and succeeded in conducting one series of tests before war conditions forced a postponement of further activities. Now that the committee has been reactivated, it will probably re-examine the previous results and schedule a new program of fundamental brake research.

Part of the work consists of field tests on all types of motor vehicles under prevailing operating conditions. These tests are to determine the practical brake performance of vehicles in service.

The following governmental and private organizations are represented on the advisory committee: Interstate Commerce Commission, National Bureau of Standards, Public Roads Administration, Department of the Army, American Association of Motor Vehicle Administrators, American Association of State Highway Officials, American Mutual Alliance, American Transit Association, American Trucking Associations, Inc., Automobile Manufacturers' Association, Automotive and Aviation Parts Manufacturers' Association, Brake Lining Manufacturers' Association, Motor and Equipment Manufacturers' Association, National Association of Motor Bus Operators, National Conservation Bureau, National Council of Private Motor Truck Owners, Rubber Manufacturers Association, Society of Automotive Engineers, Tire and Rim Association, Inc., and the Truck-Trailer Manufacturers' Association.

Trailer Output Up

Truck-trailer producers continued their upward climb during September when 3,213 units were turned out, according to the latest Census Bureau report. August production was 3,174 units. Shipments during September totaled 4,005, as compared with 3,727 in the previous month. The Truck-Trailer Manufacturers' Association expects that the industry will produce 65,000 units during 1947, which would top the prewar record of 41,869 established in 1941 but would be well below the peacetime peak of 76,234 manufactured in 1946.

END

(Please resume your reading on P. 65)

ANYWAY YOU LOOK AT IT....

TRADE MARK YANKEE REG. U.S. PAT. OFF.

is Outstanding!

SAFETY

High fidelity vision that eliminates tricky illusions. No distortion. Easily adjusted to suit specific "seeing needs" of all drivers.

QUALITY

Over 32 years experience...since 1915. Technical research, up-to-the-minute production methods and painstaking attention to detail. Yankee Mirrors are the finest in the world.

ECONOMY

Built-in-durability, metal parts bonderized, "know-how" in processing mirrors — all add up to keep your replacement maintenance down!

NO. 245 TELESCOPIC ADJUSTABLE MIRROR WITH 5" HEAD

- Extends from 19¼" to 27¾".
- Universal Mounting.
- Adjustable to any position.
- Heavy Steel Tubing.

NO. 238 6" MIRROR HEAD

Write for Catalog

See Your Jobber

245H—REPLACEMENT MIRROR HEAD Made to fit the No. 245 Telescopic Adjustable Mirror.

CONVERSION KITS

STOP AND TAIL LAMPS

DIRECTIONAL SIGNALS

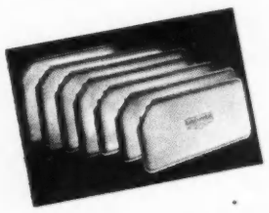
YOU'RE SAFE WHEN YOU SEE WITH YANKEE

YANKEE METAL PRODUCTS CORP., NORWALK, CONN., U. S. A.

KOLD-HOLD
TRUCK PLATES

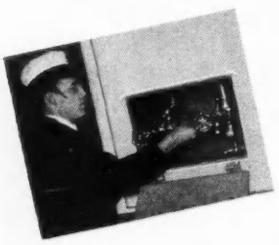
LONGER HAULS with
GREATER PAYLOAD
GREATER SAFETY

The road to profits in the transportation of perishables is well marked by the sign-posts of KOLD-HOLD advantages. Because KOLD-HOLD HOLD-OVER Plates maintain specified safe temperatures around the clock, they make possible longer routes . . . without the risk of spoilage. Because of their compactness and streamlining, they fit into any truck body with the greatest economy of space . . . thus increasing payload.



OPERATING COST - *less than 10¢ per day!*

Since KOLD-HOLD Plates contain no moving parts, they will give a lifetime of maintenance-free service. Economy of manpower is possible because undelivered loads need not be removed from the truck at night and reloaded next day. A simple "plug in" connection makes the truck a cooler room on wheels. WRITE TODAY for the latest KOLD-HOLD catalog.



KOLD-HOLD

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KOLD-HOLD MANUFACTURING CO., 620 E. Hazel Street, Lansing 4, Michigan

FOR THE BEST IN SAFETY LIGHTING AND REFLECTING EQUIPMENT...

IT'S DO-RAY ALL THE WAY

DO-RAY LAMP COMPANY
1458 S. MICHIGAN AVE.
CHICAGO 5, ILLINOIS

BUY BONDS

Detroit Dispatch

(CONTINUED FROM PAGE 48)

to last. General Tire & Rubber Co. has raised prices on all car, truck and bus tires by 7½ per cent and the prevailing opinion is that other tire manufacturers will soon follow suit.

Horses to Horsepower

AMA is getting set to do a public relations job for the trucking industry. A new booklet, "Horses to Horsepower" is coming off the press and will be available soon. Written by Frank Reck, who wrote "A Car Traveling People," which extolled the passenger car, the booklet does an excellent selling job for the truck as an important and integral part of the everyday life of the average American. AMA also has underway a new film which does pretty much the same kind of job.

Michigan Fights Diesel Tax

The Michigan Trucking Assoc. and Michigan Motor Bus Assoc. have instituted a lawsuit challenging the constitutionality of a new diesel motor fuel tax enacted at the last session of the Michigan legislature. The law imposes a use tax of 5 cents a gallon on all diesel-powered vehicles using Michigan highways, except vehicles operated under municipal franchise in which case the tax is 4 cents. The plaintiffs are six bus lines, eight trucking lines, a dairy firm, and a sand company.

Antifreeze Warning

In the wake of general warnings against certain injurious antifreeze products now being found on the market, NADA has issued a statement outlining advice from the National Bureau of Standards on handling unsatisfactory products. Dealers are advised to request the manufacturer of any questionable product to furnish a chemical analysis of the antifreeze compound showing what type of base the product contains. In absense of this analysis a simple method of determining the antifreeze base follows: If the antifreeze weighs 9 pounds per gallon, exclusive of container, it probably is an ethylene glycol type. If the weight is over 10 pounds per gallon, an antifreeze of the calcium chloride salt type is indicated. Petroleum base antifreeze, however, cannot be distinguished readily from alcohol antifreezes by this means. However, petroleum antifreezes do not mix with water. Instructions on the container consequently state that the entire contents of the cooling system must be drained and replaced with antifreeze. In the absence of other information, pour a little antifreeze into water. If it forms a layer on top of the water and cannot be mixed, it is petroleum. Where antifreeze of petroleum base is used, natural rubber connections should be replaced with synthetic. Severe knocks may take place due to low heat capacity of this product.

END

(Please resume your reading on P. 49)

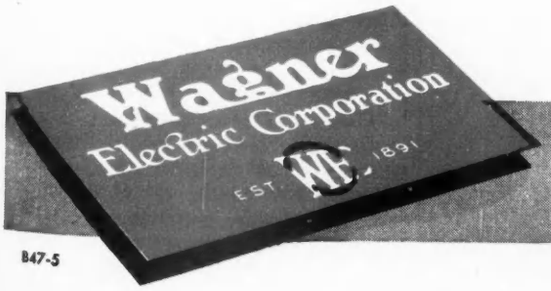
WAGNER CoMaX PROVIDES *Complete Coverage!*

No matter what your relining job—passenger car, truck or bus—the complete Wagner CoMaX line contains everything you need. CoMaX is available in drilled sets, rolls, blocks, slabs or cut segments to *exactly* meet any requirement.

It pays to have such *complete coverage* from one source of supply—especially when that source is Wagner. As a pioneer manufacturer of hydraulic brakes, Wagner *knows* what qualities are required in brake lining, and those qualities are found in CoMaX.

Consult your Wagner jobber, or write us.

Wagner Electric Corporation
6470 PLYMOUTH AVE., ST. LOUIS 14, MO., U. S. A.



LOCKHEED HYDRAULIC BRAKE PARTS and FLUID • NoRol
CoMaX BRAKE LINING • AIR BRAKES • TACHOGRAPHS
ELECTRIC MOTORS • TRANSFORMERS • INDUSTRIAL BRAKES

B47-5

65 Fleetmen Attend 2nd Maintenance Course

PROGRESSIVE technical instruction for fleetmen has scored again—this time in the form of the Second Short Course for Motor Vehicle Supervisors held at the Pennsylvania State College, State College, Pa., November 3 to 7 inclusive. The rolls had swelled this year to 73, an upswing of 13 members over last year's course. A total of 65 fleetmen attended the instruction, representing some 56 fleets throughout the eastern and central states. Yes, wide-awake fleets are alert to the advantages of modern methods of maintenance and operation, and 65 fleetmen have taken back to their organization a wealth of practical information which will benefit their operations.

This second maintenance course was organized and directed by Amos E. Neyhart, of the Institute of Public Safety, The Pennsylvania State College. He had worked with fleets throughout the country, studied their problems and obtained their suggestions for the development of the course. Instructors were selected from factory service representatives as well as from fleetmen considered expert in their respective fields. Careful evaluation of fleet maintenance problems was apparent, from the development of each instructor's lecture. Practical service and operational tips were supplemented with movies, slides, diagrams, a collection of the units in question as well as some interesting stories. Class reaction as a whole was enthusiastic.

One of the outstanding merits of the course was the wide scope of subject matter covered. While there were as many as twenty different types of fleets represented, including public utilities, petroleum transporters, drive-away fleets, over-the-road transport, pick-up and delivery and bus companies, the subjects were so developed that each member was able to pick up valuable information.

A quick review of the course reveals the following lectures:

"Engineering the Vehicle" by B. B. Bachman, Vice President, Charge of Engineering, The Autocar Co. Mr. Bachman discussed some of the problems dictating the type of engine required for specific applications, the amount of power needed for typical applications, structure, vehicle control and various other problems the engineer must take into consideration in designing a vehicle to fit present day requirements. The text of Mr. Bachman's speech has been mimeographed with the expectation that many operators who were unable to attend the course will want to procure a copy. This may be obtained by writing to Robert F. Wood, Adv. Mgr., The Autocar Co., Ardmore, Pa.

"Proper Selection of the Vehicle," by R. T. Jennings, Supervisor Service Schools, GMC Truck and Coach Div., General Motors Corp. Mr. Jennings developed transportation costs and service problems in relation to overloading, proper axles and transmission ration, poor load distribution, etc. With the aid of charts and diagrams he showed operators how they could attain greater economies, longer lived units and more satisfactory operation by intellegently selecting the truck of proper size, horsepower, capacity—with the procurement of the right axle, transmission, tires, etc., to fit the job.

"Brake Maintenance," by John V. Bassett, Project Engineer, Raybestos-Manhattan, Inc., Mr. Bassett reviewed highlights of brake adjustments, servicing and lining selection for more satisfactory life and safer operation. Some of his points with regard to reducing brake noises will be covered in a later article.

"Clutches, Transmissions, and Axles," by Harry A. Schneider, Special Representative, The Timken-Detroit Axle Co. Mr. Schneider enlisted the aid of movies to show the design operation and maintenance of axles, emphasizing the advan-

(TURN TO PAGE 151, PLEASE)

There is no substitute for genuine Bendix Drive Parts

It would be hard to imagine any service man being as silly as our hero in the picture. Yet there is another type of shortsightedness that is surprisingly common—the use of other than genuine parts for repairs.

A customer brings his car to you for repairs because he feels he can trust you to do an adequate job. And when you risk losing his confidence by using makeshift or inferior parts it's just the same as if your own work was inferior.

Genuine Bendix* Drive Parts are engineered and manufactured in the same plant by the same skilled hands and to the same exacting standards as the original Drives—and, properly installed, will give the same satisfaction.

Don't risk losing old customers for the sake of a few pennies—insist on Genuine Bendix Drive Parts when you order from your distributor.

*REG. U. S. PAT. OFF.

"Look for the blue and white box"

Bendix Drive

ECLIPSE MACHINE DIVISION of ELMIRA • NEW YORK

Bendix AVIATION CORPORATION

65 Fleetmen

(CONTINUED FROM PAGE 148)

tages of the new two-speed axles. He showed how to select the proper axle to fit special requirements and listed appropriate maintenance tips as a step in prolonging life and service.

"Cooling System Maintenance," by Daniel H. Green, Manager, Automotive Engineering Department, National Carbon Co. Mr. Green had developed a new series of slides to illustrate his lecture on cooling system service and anti-freeze selection. He outlined a comprehensive list of requirements to proper radiator and block cleaning, emphasizing the importance of cooling system preventive maintenance.

"Electrical Power Equipment," by F. P. Plovick, Service Department, Delco-Remy Corp. Mr. Plovick introduced his lecture with a review of basic electricity, then traced circuits through various electrical units. He developed practical tips on maintenance of the distributor, generator, voltage regulator and offered advice on special problems presented by the group.

"Governors and Carburetors," by John W. Pauli, Fleet Engineer, Ethyl Corp. Mr. Pauli spent two worthwhile periods showing circuits of various makes of carburetors, discussing adjustments and service with the aid of slides. His comments on precision governor adjustments will follow in a later article.

"Steering and Wheel Alignment," by John C. Barrows, Sales Manager, Manbee Equipment Co. Mr. Barrows discussed the five angles of wheel alignment and stressed the importance of timely maintenance of the system.

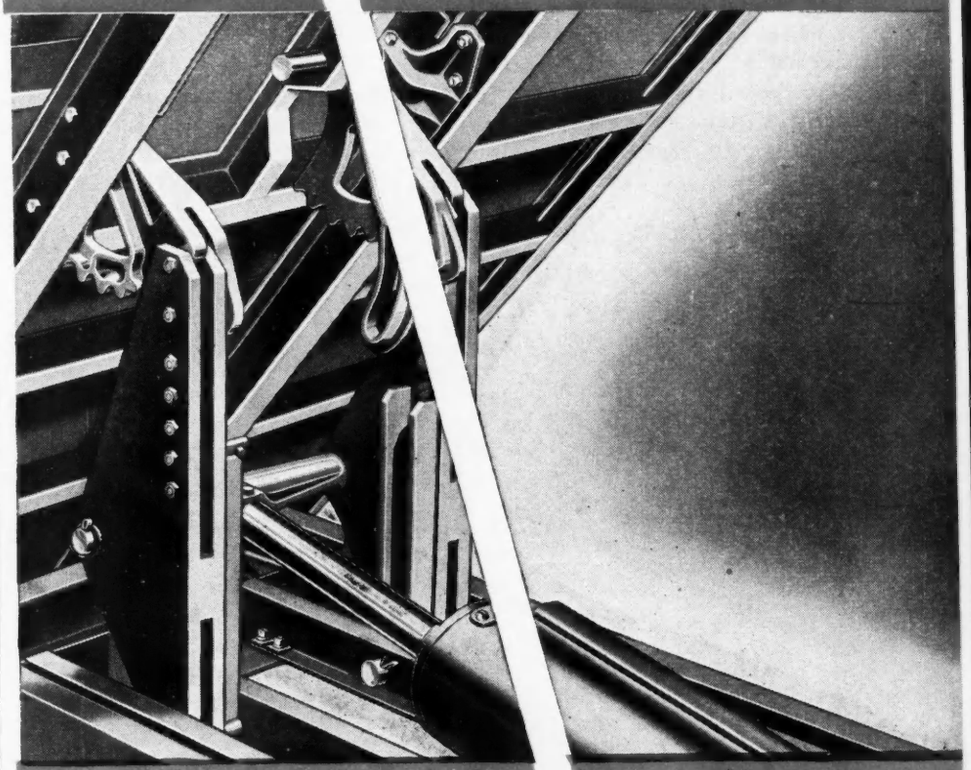
"Valves and Valve Guides," by Norman Hoertz, Chief Engineer, Thompson Products, Inc. Mr. Hoertz presented valuable information on the adjustment, maintenance and fitting of valves and guides. With the use of slides he developed important points, with regard to servicing, concluding by answering specific questions on valve troubles from the group.

The latter part of the course was devoted to mechanic selecting, orienting and training as well as other professional problems of the fleet supervisor. Mr. Neyhart contributed to this phase, covering such subjects as the nature and value of tests for selecting and training mechanics. With the help of R. T. Jennings a special session was conducted on testing, selecting, grading and orienting the shop employee. Members of the class were given a number of different tests were graded and the scores discussed. Mr. D. B. Danchik of International Harvester presented information on supervising the shop employee, while A. W. Bass of The Atlantic Refining Co. covered the subject of training the new and in-service shop employee. R. L. Morris of John Labatt Limited, London, Ontario, contributed to the program, outlining his company's progressive plan for building better relations between management and the shop employee.

OPERATORS KNOW FROM EXPERIENCE THAT

GALION'S DOUBLE LIFT MEANS DOUBLE SERVICE

Outlasts the chassis *Increases hoist efficiency*



From coast to coast and on all kinds of jobs Galion's double lift arm hydraulic hoist has for years had a reputation among operators for dependable service. Through its automatic compensating lift fulcrum, any load is always handled without excessive stress or strain. Ask any Galion operator about his Galions and you'll know why Galions always outlast the chassis. The Galion Allsteel Body Co., Galion, Ohio.

GALION Allsteel

HYDRAULIC HOISTS and BODIES MAKE BETTER DUMP TRUCKS

Accident-Prone Drivers

(CONTINUED FROM PAGE 65)

rather on driver "attitude." However, a driver's attitude at a particular time will be made up from his physical and mental condition, and also his previous experience and present driving habits. He thinks traffic accident statistics are very deficient as to real accident causes. They tell only where and when different kinds of accidents happened; but never "why" the driver so acted as to cause, or failed to avoid the accident.

The average driver, Kramer said, tends to believe he is "one of the world's best"; and in an accident he usually blames "the other fellow." He also likes to use his vehicle (especially his automobile) to express his own personality—speeding when he feels that way and forgetting precautions in a get-there emergency. The average truck driver also has "dislikes"—maybe his job, his equipment, his supervisor, or the fleet safety training methods. He also likely has a feeling of "personal immortality." He sees accidents, but keeps thinking "this won't happen to me."

The training remedy, said the speaker, is to work through "the basic human urges." These are related to his own economic security, his family, his pride in safety awards. But don't "teach at" the driver. Rather, develop group training programs to enable the drivers mutually to teach each other.

BOLSER
Safety Equipment

GENUINE BOLSER FLARE

There is no known warning signal equal to the oil-burning flare. It PRODUCES its own light—does not depend on haphazard reflection for warning. The FLICKERING MOVEMENT of the open flame arrests attention—is visible from ALL angles. This type of warning is recognized throughout the nation as a signal of road obstruction. It is not confused with reflectors, tail lights, etc.

Protect YOURSELF and your EQUIPMENT and the MOTORING PUBLIC by using the SAFEST type of warning signal Genuine BOLSER OIL BURNING FLARES.

If it Nests its a **BOLSER**

- Accepted nationally as the LEADER in truck flares, the flares are compacted under our exclusive patented "nesting" feature, making them EASIER TO SET OUT — EASIER TO PICK UP.
- A quarter turn of the carrying handle locks them into a leak-proof, rattle-proof and wear-proof unit!

Hi-Way Warning FLAGS . . . Ful-Vue Truck MIRRORS . . . Truck REFLECTORS . . . Truck Marker and Clearance LIGHTS . . . Truck FLARES . . . DIRECTION SIGNALS . . . FUSEES

THE BOLSER CORP. Cedar Falls, Ia.

Labor Cooperates

LABOR unions come into the safety picture through the showing of a "Drive in Safety" educational sound film, developed jointly by the Teamsters Unions, A. F. of L., for the Eleven Western States, and the Motor Truck Assn. of Southern California. The film presents in entertaining manner a well-rounded driver testing and training procedure being sponsored by these unions for its members. The film, reported to cost $15,000, shows the use of a battery of testing devices, some of them especially designed. After the showing, the print used was formally presented to President Ned H. Dearborn of the National Safety Council by Ray Lehenney, Director of Public Relations for these unions.

"Truck driving," Lehenney said, "has become one of the most expert professions in the world, and demands safety training. Safety is no snob. You can be in danger in any kind of driving. This film shows the tests which will enable our drivers to know their deficiencies. Through it, we hope to do a bigger job for safety at the labor end."

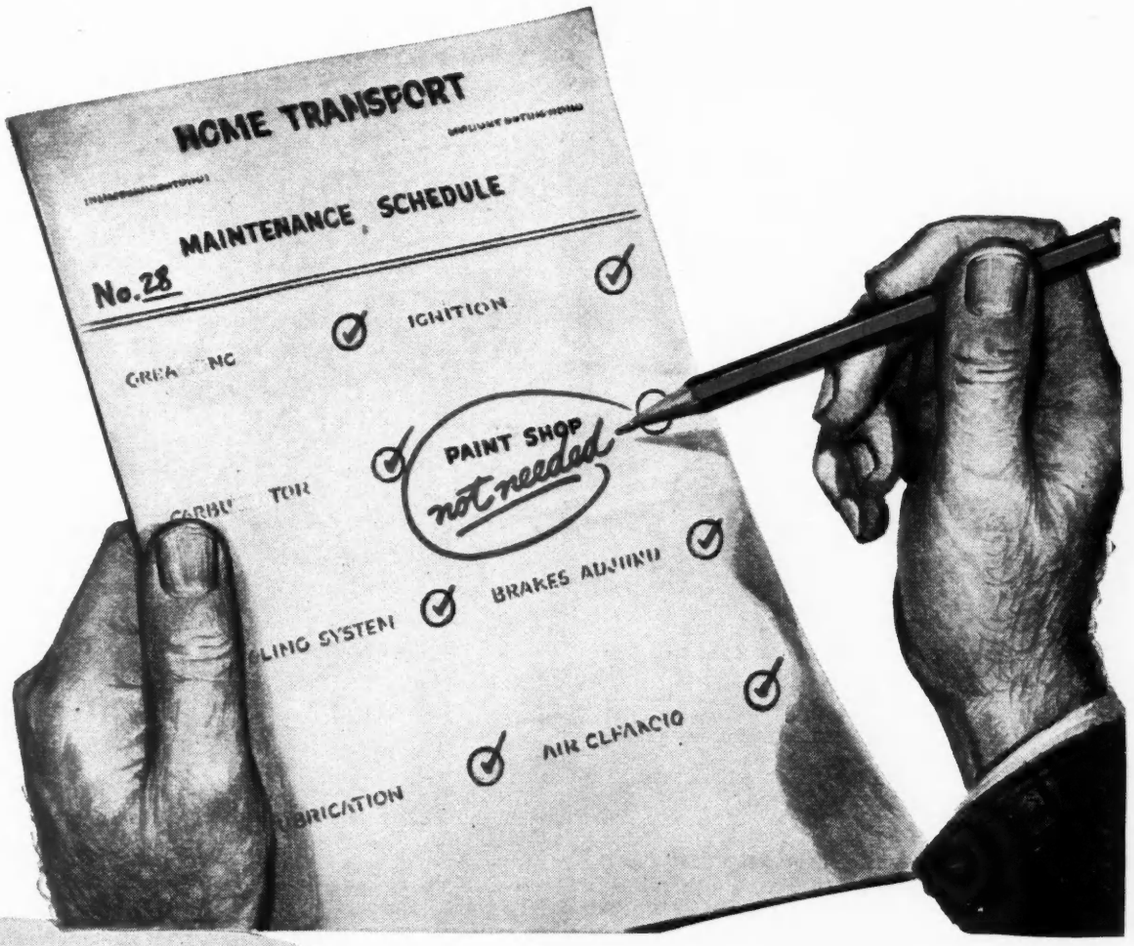
Safety Poster

THE second session of the Commercial Vehicle Section featured a panel discussion on "Making Better Use of Safety Materials." Paul H. Coburn, Director of Motor Transportation Bureau, National Safety Council, previously had listed some of the "safety tools" in use by fleet operators. These included: safety contests, posters, booklets, driver letters, safety awards, dash cards, films and other visual aids, and safety reports for management.

J. P. Hightower, Mgr., Dept. of

(TURN TO PAGE 154, PLEASE)

"DULUX" Gives Protection Plus!



... measure it in miles and years!

You find fewer candidates for the paint shop when your fleet is protected with tough, durable "DULUX" Enamel! For years the No. 1 choice of fleet operators, "DULUX" proves itself *on the road*—by keeping its handsome gloss and color longer, despite severe weather and rough handling.

It's this *extra wear* that spaces your repaint jobs at wider intervals. You can measure it in miles or years—or in good, hard dollars! Either way, you'll find it good business to place your order for "DULUX" today.

E. I. du Pont de Nemours & Co. (Inc.), Refinish Sales, Wilmington 98, Delaware.

DU PONT
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AUTOMOTIVE ENAMEL

BETTER THINGS FOR BETTER LIVING
... *THROUGH CHEMISTRY*

NO ONE ACCESSORY Does More
● To Improve Engine Performance
● Reduce Wear, Maintenance and Repair
● Lengthen Engine Life
THAN A GOOD OIL FILTER

A *good* oil filter quickly pays for itself many times over.

Besides increasing engine life and reducing wear, thoroughly filtered, cleaned oil provides the kind of lubrication that insures full-power engine performance. Furthermore, oil costs are cut and repairs or replacements reduced.

From actual comparisons of tests and long range performance records—fleet operators, engine builders and users select and use MICHIANA Filters.

MICHIANA Filters are economical too—they are efficient for long mileage and are easily made good as new by replacing the element or filter material.

You make money regularly on the MICHIANA Filters you install. Write for Bulletin 839 to MICHIANA PRODUCTS CORPORATION, Michigan City, Indiana.

MICHIANA OIL FILTERS

Request your copy of latest illustrated Bulletin 839 today.

Accident-Prone Drivers

(CONTINUED FROM PAGE 152)

Safety & Personnel, Pennsylvania Greyhound Lines, was discussion leader. Members of the discussion panel were: Gordon Walker, Safety Dir., Denver Chicago Trucking Co.; Max Jensen, Supt. of Operations, Consolidated Freightways; George Macklem, Safety Dir., Railway Express Agency, and H. M. Clayton, Standardization Eng., Memphis Gas, Light & Water Div.

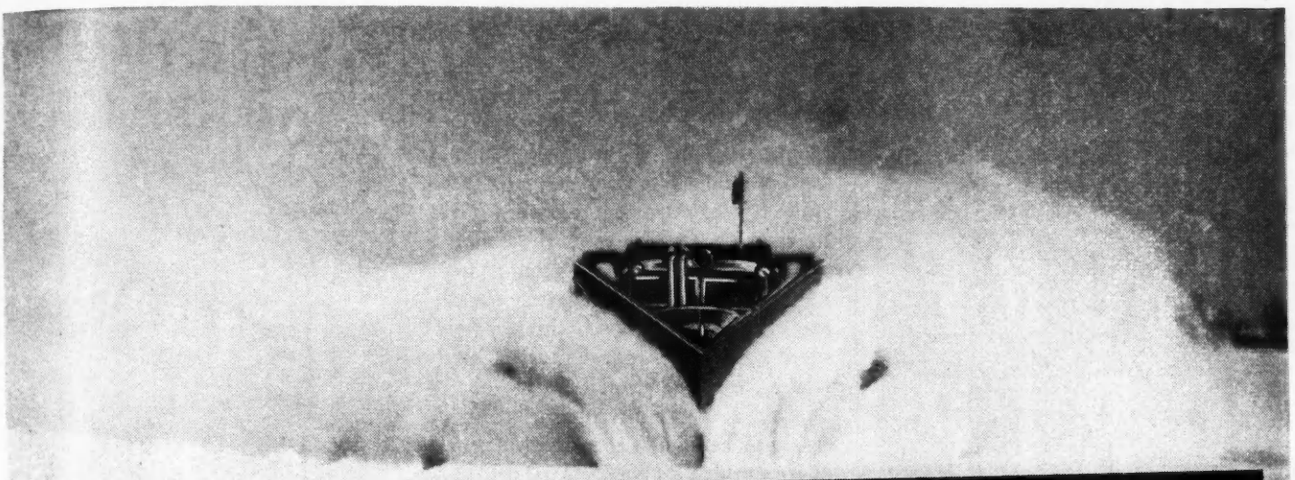
The first question was on uses for safety posters, other than bulletin board display. It was advised that they made a good "back drop" for general fleet safety meetings; and also when special types of accidents were reviewed. As to safety material mailed to a driver, it was thought best to send it to his home, to gain his more careful reading and perhaps also by his wife. Monthly mailings were considered best, but one panel member reported good results from weekly mailings in a home-made safety slogan contest. Another operator asked driver opinions on city "horn honking," and from 500 drivers he received 28 written replies. In another instance, a Safety Director asked for non-signed opinions on a controversial safety topic, and 80 per cent of his drivers replied.

Everybody Wants Contests

THERE was unanimous panel opinion in favor of some sort of fleet safety contest. One value was to keep the Safety Director "on his toes." Inter-company and intra-company contests were most favored. Short contests—limited to six months, or even three to four months—were advocated. A St. Paul operator reported that their Chicago unit fleet previously hadn't entered their intra-company contest because of assumed more severe Chicago hazards. But after being "puffed up," they had entered and won by dropping their previous annual total of 58 accidents down to 11.

The make-up and work of accident review boards was carefully considered. If a seven-man board, as an example, three members usually would be drivers, chosen by the drivers. Three would represent manage-

(TURN TO PAGE 156, PLEASE)



No other equipment can clear snow as fast—hit drifts as hard as *WALTER SNOW FIGHTERS*

Without traction, a truck is helpless on snow and ice. With limited traction, much of its power is wasted. But with *full* traction, as provided only by Walter Snow Fighters, every ounce of engine power is put into fast pick-up, sustained high speeds and tremendous pushing force.

How is this obtained? Through the Walter 4-Point Positive Drive, with three automatic locking differentials which concentrate engine power on the wheels having traction, at all times. There is no wheel-spinning, stalling or side-slipping. So great is the traction, that many highway departments operate successfully without using chains!

This tremendous traction, power and speed permit you to mount the biggest, most efficient plows and remove a greater volume of snow on each run. You clear your routes faster, throw snow farther, blast through deepest drifts.

Ask your Walter distributor for detailed facts and figures. Literature sent upon request.

Full traction, with less ballast

● Walter Snow Fighters provide full traction with much less ballast than other trucks. There is less deadweight to cut down speed and pushing power. There is less danger of overloading small bridges and roadways of limited tonnage capacity.

WALTER MOTOR TRUCK COMPANY

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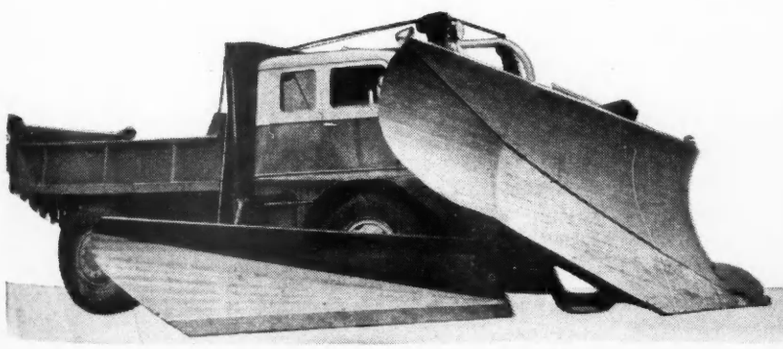
Queens, L. I., N. Y.



WALTER
SNOW FIGHTERS

Aye ...

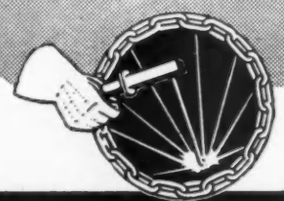
MORE GRIP

MULTI-GRIP REGULAR

McKAY

TIRE CHAINS

"To be sure" in *all* winter weather, be sure your car is equipped with McKays—the Tire Chains that are *easy-to-put-on* and *hard-to-wear-out*. Scientific design assures maximum traction; case-hardened crosslinks give longer wear.



THE McKAY COMPANY

465 McKAY BUILDING

PITTSBURGH 22, PA.

Accident-Prone Drivers

(CONTINUED FROM PAGE 154)

ment, and the seventh member would be the Safety Engineer, assumed neutral. It was reported that the driver members often were more exacting on a driver than the management members. Driver members usually are restricted to those with top personal safety records. One fleet capitalizes the educational value of its board meetings by requiring all drivers with accidents during the previous month to sit in. Special effort is made to have the board arrive at final unanimous decisions.

The panel discussion on driver tests was preceded by a report on winter driving hazards made by Ralph A. Moyer, Research Professor Highway Engineering, Iowa State College. This report on "What the 1947 Winter Driving Tests Show" was published in the October issue, page 34.

The Law of Chance

H. M. JOHNSON, Prof., Dept. of Psychology, Tulane University, summarized the general problem under consideration at this session in an address on "The Detection and Treatment of Accident Prone Drivers." He reviewed previous research work by experimental psychologists, and especially the study made some years ago of accidents by 2300 drivers of the Boston motor bus and street car system. One of the chief factors under debate was what percentage of these reported accidents might have occurred anyway, by the law of chance, regardless of any possible "accident proneness" among these drivers. Also, in this and other like situations, what is the correlation, if any, between the reported physical and mental deficiencies of individual drivers, as shown in tests, and the kinds of accidents with which they are charged?

As his general conclusion, it seems that Professor Johnson thinks our national accident control problem for motor vehicle drivers has been much muddled by the effects of the law of chance. That is, some drivers considered "safe drivers" have been so only because of good luck. Accidents are partly "caused," and based

(TURN TO PAGE 158, PLEASE)

FASTER-FILLING NON-SPILLING

that's VENTALARM!

- NO BLOW-BACKS!
- NO OVER-FILLING!
- NO SPILLAGE DUE TO TEMPERATURE EXPANSION
- NO "SPLASH-FILLING"!

One simple rule suffices when your attendants service VENTALARM*-equipped automotive gas tanks — just "FILL AT FULL SPEED 'TIL THE WHISTLE STOPS!"

VENTALARM eliminates waste caused by overflow, blow-backs, and splash — even provides automatically a correct expansion zone within the tank. VENTALARM equipment means vehicles lose less time at the fill point. Tanks can be filled at full pumping speeds, with complete elimination of time-consuming "dribble-filling".

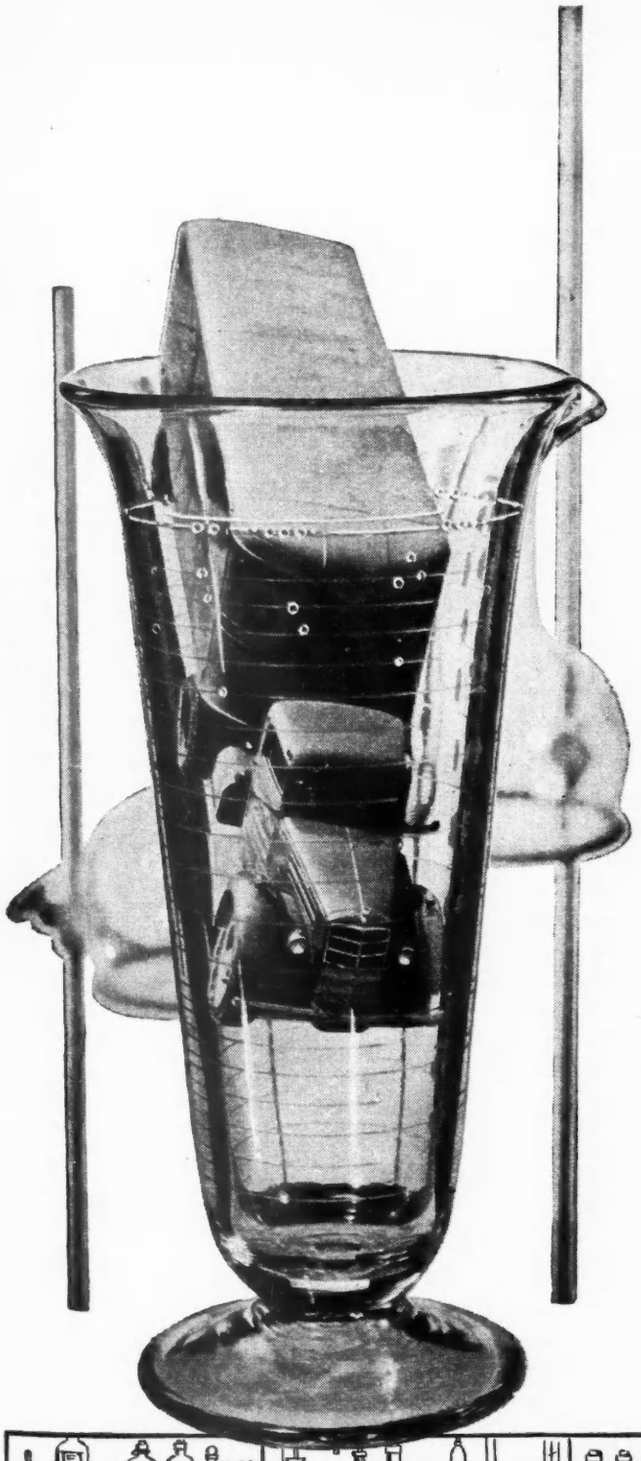
For fast-filling, non-spilling efficiency, specify the VENTALARM *Fill Signal when you order new vehicles. Now factory-installed on twelve makes of buses, trucks, and taxicabs.*

SCULLY SIGNAL COMPANY

Cambridge 41, Massachusetts

*T. M. Reg. U. S. Pat. Off.

VENTALARM GAS TANK FILL SIGNAL



Why your fleet needs this Lab Service

Shortages of trucks and parts are almost as bad as during the war. This is no time to excuse avoidable repairs; it *is* time to take *extra* precautions. Here's how Valvoline can help you: In addition to the extra protection of improved Valvoline Motor Oil, Valvoline offers you expert laboratory service. As a Valvoline user, you get a thorough analysis of your drained oil to guide you in setting a safe drainage period — and to warn you if engine trouble is developing.

This added vital service is performed by men experienced in practical maintenance as well as laboratory work. It can help you avoid those costly lay-ups.

Ask your Valvoline man how you can get this service—or write

VALVOLINE

FLEET CONTROL LABORATORY SERVICE

FREEDOM-VALVOLINE OIL COMPANY

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WGB CLAROFICATION Is Economy

WGB ClarOfiers and Cartridges cost less because they do more and do it longer. The ClarOfier is practically indestructible and every atom of the Cartridge is essential to filtration — and the Cartridge can be changed without tools.

There is a reason why such companies as Autocar and Mack Truck are using — and have used — ClarOfiers as standard equipment for years; the reason is the economy operators find with ClarOfier equipment.

This new 2-color book explains the construction, operation, and economies of clarofying oil for gas and Diesel engines. Write for a free copy.

WGB
OIL CLARIFIER, INC.
KINGSTON, N. Y.

Accident-Prone Drivers

(CONTINUED FROM PAGE 156)

on the law of chance they might happen to any driver. However, he thinks there is some validity in the tests for accident-proneness as developed to date, and that fleet operators should use every possible means to carefully select their drivers. Also, when a driver is found by a fleet operator to be accident-prone, he should be transferred to other work.

As to general automobile drivers, Professor Johnson thinks state licensing tests should be made much more strict. He said that "whenever this country decides to minimize highway accidents, it can be done." The accident proneness in all drivers might be tested, but he thinks it might not be practical at present to try to do so. His suggested immediate remedy is to make much more stringent the testing of drivers when licensed by the states and to enforce all traffic regulations. He also would like to see the advance training of motor vehicle drivers made as thorough as is now required for railway engineers and airplane pilots. He grants that such a national program, of course, would involve the annual expenditures of many millions, roughly estimated by one authority as a total of $17 per year per licensed driver.

Driver Clinics

THE follow-up panel discussion was on the question, "Have Driver Clinics Any Practical Safety Value?" Earl S. Allgaier, Research Eng., Traffic Engineering and Safety Dept., American Automobile Assn., was discussion leader. There were initial comments by the five panel members, and safety delegates in the audience also submitted a few questions.

A. R. Lauer, Prof., Dept. of Psychology, Iowa State College, reported that previous studies completed at Iowa had not yet developed tests which would permit the positive picking of accident-prone drivers. Some of the reasons for these accident test deficiencies were listed as: lapse of time between the accident and the examination of the driver; studies made with all types of drivers, not accident-prone drivers alone; drivers didn't tell of previous accidents; unreliability of accident reports, and failure to classify all accidents as to responsibility. He agreed that in groups of accidents the element of luck always entered, and that they had found no correlation between rated driver types and night accidents. He reported that further accident studies, to be made right on the spot, were needed. He also agreed that "driver attitude" at the time of accident is important.

Milton D. Kramer, Asst. Dir., Center for Safety Educ., New York Univ., criticized the research report by Professor Johnson on the ground that there are limitations arising from too exclusive dependence on mechanical testing devices, and also in the assumption that accidents due to chance. "What is it," he asked, "that causes a driver to fall into an accident class charged to chance?"

As his answer, he contended that some of the reported "accident causes" were not causes at all. Rather, he argued, the greatest cause factor is "driver attitude" at the time of the accident. He also thinks that the chief value of driver selection "tests" is educational. As to the validity of tests, he agreed that if test results from a group of accident drivers were compared with a like group of non-accident drivers, there would be found physical and psychological differences. But to date, he stated, evaluations of these differences hadn't been worked out. Further research is required.

Reexamine Every Year

EDWARD J. EMOND, Dir., Automotive Safety, Armour & Co., stated the belief that driver clinics have their chief value in finding out "the attitude" of the driver toward safety; but that the accident clinic is "only one tool" to be used in practical driver accident control. The past performance of the driver also must be studied. Within his company, many drivers had showed improvements in safety within 30 to 60 days after they had been through a clinic. Emond also believed that drivers should be examined or retested in a clinic at any time that they show a marked change in their driving record, and that all drivers should be reexamined or retested in a clinic at any time that they show a marked change in their driving rec-

(TURN TO PAGE 210, PLEASE)

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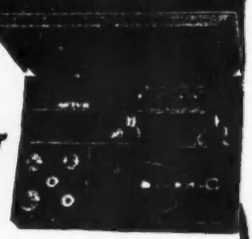

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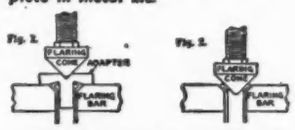

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Accident-Prone Drivers

(CONTINUED FROM PAGE 158)

ord, and that all drivers should be reexamined by the state every year, at the time of the renewal of their driving licenses. Emond stated that, in coordination with Dr. Lauer, Armour & Co. is now making a study of their 4000 drivers, and he stated that, by the time of the next Congress, "we expect to have something to offer."

J. S. Baker, Dir. of Research, Northwestern Univ. Traffic Institute, stated that every motor fleet manager will be conducting a driver clinic of some sort, and that the key to the value of his clinic will depend on the personality of the person who is conducting it. It is still an art, he thinks, to be able to make an analysis of correct driving values in the selection of drivers, and "it can't be done by looking in a book." He believes that accident frequency can be predicted and that evaluations of accident proneness can be made. He listed, as problems that may enter into the selection of a good driver: illness, maturity, driving practices. "There are many cases," he said, "where the value of a clinic has been proved."

Amos E. Neyhart, Administrative Head, Institute of Public Safety, Pennsylvania State College, stated that the three general clinics in use by the College were to test driving attitudes, eyesight, and a traffic road test. He stated that there were "many examples" of groups which had had a reduction in accident rate after having passed through their clinic. He couldn't say what part of the tests might have aided. "Maybe," he added, "the very fact of their going through the clinic changed their driving attitude."

(TURN TO PAGE 212, PLEASE)

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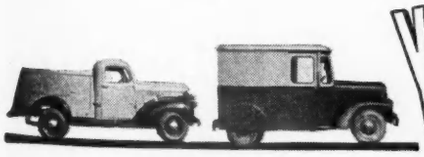

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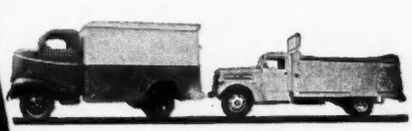

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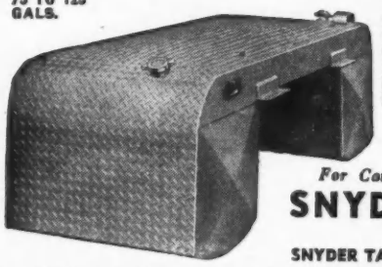
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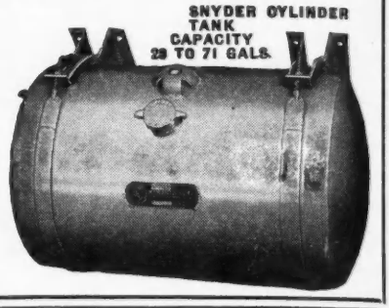
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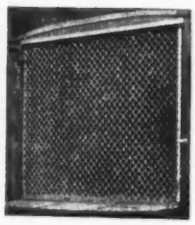
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Accident-Prone Drivers

(CONTINUED FROM PAGE 210)

In answer to a question as to the reaction of labor unions toward driver clinics, it was stated that on the Pacific Coast the unions had aided in the establishment and conduct of such clinics. Also, in the Middle West, the unions were reported as "favorable, but they haven't yet taken any action."

Preventability

ONE of the final sessions was devoted to the question of "Determining the Preventability of Accidents," with John A. Ebling, Vice-Pres., Olson Transfer Co., as the presiding chairman. The general practices in the industry for such determination were reviewed by K. F. Ketzel, Dir. of Safety & Training, Fred Olson & Son Motor Service Co. This was followed by a panel discussion of the topic, with Joseph Grumme, Jr., Safety Dir., Silver Fleet Motor Express, Inc., as chairman. The discussion mostly centered about the value of an accident review board for the double purpose of bringing out facts and to determine whether the accident is chargeable against the driver and what may be done to prevent future like accidents.

The panel participants included Kenneth N. Beadle, Dir. of Safety, Pacific International Express Co.; Edward J. Emond, Dir. of Automotive Safety, Armour & Co.; Carl J. Knurck, Dir., Safety & Personnel, Keeshin Motor Express Co., and G. D. Sontheimer, Administrative Asst., Dept. of Operations, American Trucking Assn.

The usual practice, it was brought out, is to have a representative of the

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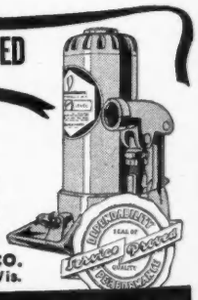
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Accident-Prone Drivers

(CONTINUED FROM PAGE 212)

fleet insurance carrier sit in at a board hearing, possibly to add additional facts, but he does not have a vote in the board decision. Board meetings usually are held within two weeks after an accident. If it is a serious accident, all board members may go to the scene. Where the driver is in a specialized group, then at least one board member should be from that group. For example, a "trouble shooter" specialist, at a hearing to consider a trouble shooting accident. One large company reported that their top executives likewise must come before a General Review Board when they have an accident. The agreement was that in general the only penalty assessed against a driver found "chargeable" for an accident should be loss of his safety badge and safety standing.

National Standards

THE problem considered at the final session was the advisability and possibility of having "a national standard for safe driving." Previous to the panel discussion there was a general talk on the topic by W. Rob-

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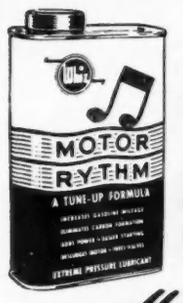

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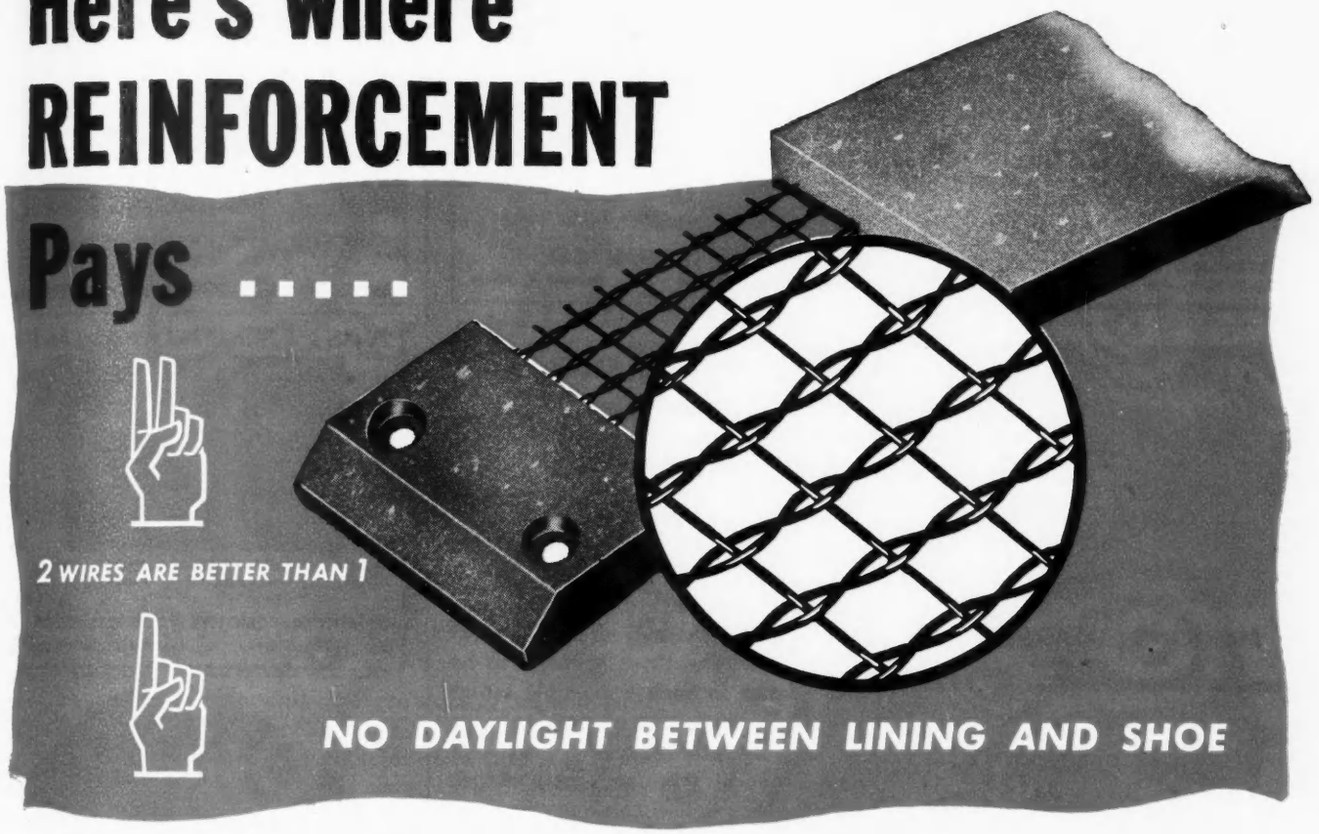

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Accident-Prone Drivers

(CONTINUED FROM PAGE 214)

ert Smith, Mgr., Personnel & Insurance Dept., Scott Bros., Inc. He thought that this need and possibility did exist, regardless of the evident great difficulties ahead in working it out. The three agencies to be considered in such a possible set-up would be the setting of standards for a model "safe driver"; and like standards in type and maintenance of motor vehicles, and in the construction and traffic supervision of streets and highways.

He suggested that, to move toward such a national goal would require (1) driver training courses in all high schools, (2) standardized licensing of drivers on a plan uniformly set up and administered by all states, including uniformly good physical and mental and operating tests for all drivers; and (3) and a national standard of values to guide all important companies in the hiring, training, and dismissal of drivers, which of course would require much more intensive development in driver psychology and "accident proneness" detection, and its control, than at present is even dreamed

(TURN TO PAGE 218, PLEASE)

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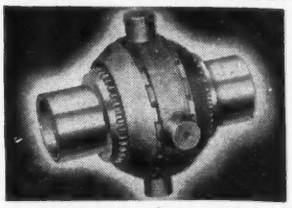

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Accident-Prone Drivers

(CONTINUED FROM PAGE 216)

about. Likewise, there must be developed safety standards in the engineering of vehicles, and the construction of highways not at present even outlined.

The leader for this discussion was C. D. Calkins, Dir. of Safety, Pacific Motor Trucking Co. Additional panel members for discussion of this topic were A. Ewing Greene, Vice-Pres., Mason & Dixon Lines, Inc.; H. D. Scheffer, Mgr., Automobile Accident Prevention Dept., Auto Owners Insurance Co., and Don E. Townsend, Safety Dir., Dixie-Sunshine Trailways. In the discussion was emphasized the present conflict and differences in traffic regulations from one state to another. As to tests in selection of drivers, the meeting of the previous day had shown that there were yet no tests adequate and no national standards available or in sight.

It was advocated that the National Safety Council should be a leader in making such a start, since there now were in all NSC contests a total of 170,000 vehicle drivers. It was

(TURN TO PAGE 220, PLEASE)

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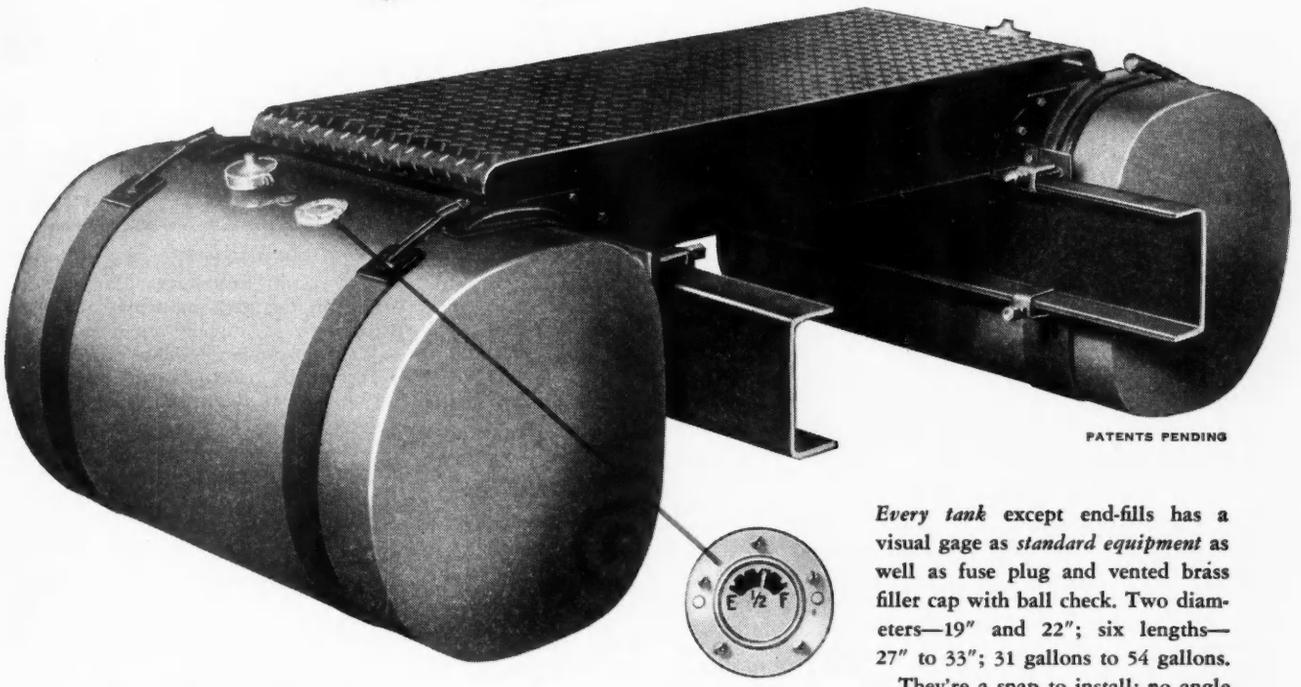
PRIOR OB-ROUND *Safety Tanks*



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The Prior OB-Round Safety Tank is the greatest improvement since the inception of safety tanks. See how these modern, compact tanks hug the frame, stay well inside the tires. Note the simpler-than-ever mounting brackets. *Capacity?* OB-Rounds are lighter in weight per gallon, to reduce your operation costs. *Safety?* They have all the famous safety features and strength of Prior cylindrical tanks. Underwriters' Laboratories approval, of course.

Every tank except end-fills has a visual gage as *standard equipment* as well as fuse plug and vented brass filler cap with ball check. Two diameters—19″ and 22″; six lengths—27″ to 33″; 31 gallons to 54 gallons.

They're a snap to install; no angle irons or U-bolts to fuss with—no holes to drill in frame. Interchangeable on any truck frame width.

The above assembly includes the Prior streamlined tool chest. It fits snugly against frame and tanks and is a roomy, convenient tool compartment with a hydraulic jack well. The 4-way non-skid cover (standard equipment with Prior) can be locked and serves as a deck for the operator. Also available in pairs or single mounting.

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Accident-Prone Drivers

(CONTINUED FROM PAGE 218)

pointed out, as one obstacle to the development of national standards in safe driving, the large variations in road hazards and driving conditions in different parts of the country. For instance, the Pacific Coast and general western area, as contrasted with the congested streets and highways in the largest cities and the far east.

One example of safety possibilities in mass training of drivers was mentioned from Detroit. Here for three years some large companies have been conducting a driver refresher course. It was found, as a surprising fact, that when old-time drivers, assumed to be expert, were retested that 75% of them actually failed to meet minimum standards. But after three days of refresher practices, all of them were able to pass satisfactorily. This brought forth the repeated suggestion that each state, before a driver's license is renewed each year, should require the driver again to prove his driving ability.

END

(Please resume your reading on P. 66)

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REFLECTORS • LAMPS • FLARES

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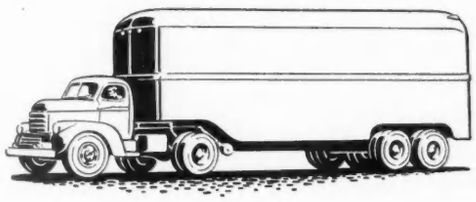

ZENITH has more heavy-duty carburetors in use than any other make...

...Because

ZENITH HAS A

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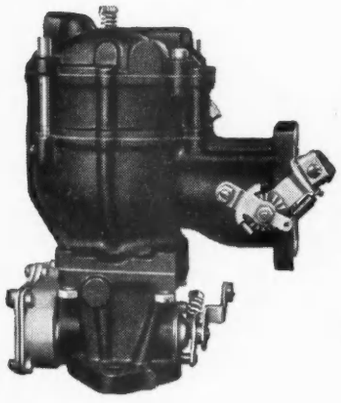
TAILOR-MADE TO EVERY HEAVY-DUTY NEED



It's easy to understand the overwhelming preference that Zenith* commands in the heavy-duty field, if you realize that Zenith is the only manufacturer specializing in this type of carburetion with a carburetor for every heavy-duty need. Zenith builds to the requirements of the job—never compromising quality merely to obtain quantity production. Zenith quality—standard of the industry—reflects the skill and experience built up over thirty years. Specify Zenith—your assurance of reliable, economical carburetion! Your Zenith distributor will be glad to help you, or write the factory direct.

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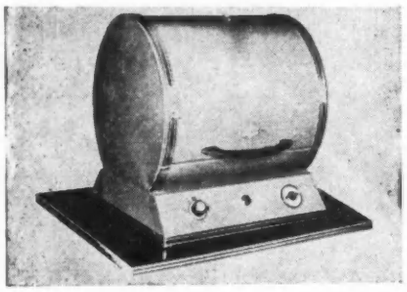
New Products

(CONTINUED FROM PAGE 142)

P85. Bonding Oven

A new Bonding Oven with accessories for bonding brake lining to shoes has just been announced by Barrett Equipment Co., St. Louis, Mo.



Streamlined and incorporating many new features, the oven is an electrically heated and thermostatically controlled unit, including pilot light and automatic timer. It is capable of holding a temperature of 500 deg.

The specifically designed cylindrical shape of the oven creates equal heat distribution due to the scientifically positioned heating elements, which maintains a constant even degree of heat throughout. The oven is insulated with 2 in. of thick, high grade insulating material. Heating range is from 0 deg. to 500 deg. in a few minutes. Heat loss when oven door is opened is held to an absolute minimum.

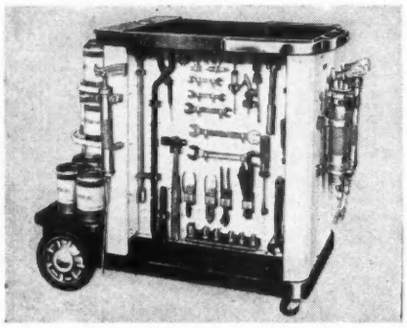
Adjustable flexible spring steel bands and spreader hold the lining and adhesive on the brake shoe during the baking operation. The spring steel bands are adjustable to shoe sizes that range from 9 to 14 in. in diameter.

Use Free Postcard for More Details.

P87. Lincoln Servmobile

Lincoln Engineering Co., St. Louis, Mo., announces a new improved Servmobile as another addition to the line of lubricating and service-merchandising equipment. Designed as a portable, work-organizing unit, it speeds up service, saves time and steps.

It has a heavy-gage, reinforced steel work table top covered with a durable black rubber mat. A tool panel, punched at 1 in. centers permits neat arrangement of hangers to accommodate a large variety of tools. The other side of the Servmobile has two utility storage spaces



for miscellaneous service accessories. Rear end-panel, and both sides of front end-panel are punched for attaching brackets to hold Specialized Lubriguns.

Use Free Postcard For More Details.

P88. Fuel Additive

The J. A. Tumbler Laboratories, Inc., Philadelphia, announces a new product designed to eliminate fuel line freezing.

It is claimed that "De-Icer" permits water to become part of the gasoline itself, thereby eliminating any moisture accumulation which may cause trouble.

"De-Icer" also serves as a rust inhibitor and loosens gum and sludge deposits.

Use Free Postcard for More Details.

P89. Demountable Battery

A new type of demountable automobile battery that can be taken part, repaired and reassembled with an ordinary pair of pliers in 15 min is manufactured by Associated Battery Assemblers, Los Angeles, Calif.

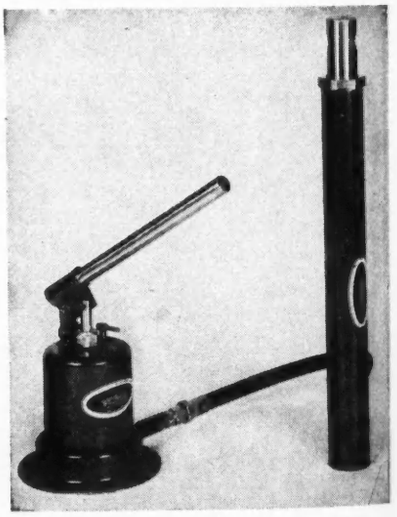
Marketed under the name of the NuForm Demountable Battery, it contains no sealed parts and can be completely disassembled into its components. Features include a

new designed grid, and cushion suspension of the plates from the covers of the cells. The latter prevents injury from shock and vibration which results when plates rest on the bottom of the battery. It is also claimed that the radical design and construction of this battery eliminate leakage, corrosion and sulphation around the terminals.

Use Free Postcard For More Details.

P90. Hydraulic Ram

The Miller Hydraulic Engineering and Sales, Detroit, Mich., announces a new, simple, manually operated pump and hydraulic ram. The pumping unit is small, sturdy and requires a minimum of space for in-



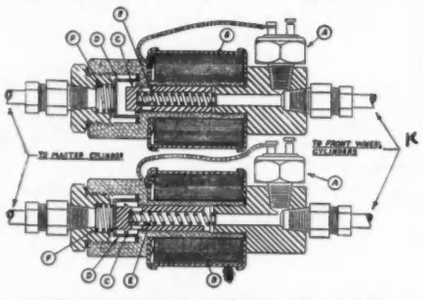
stallation and operation. The control valve has a positive action and permits lowering at any desired speed, regardless of position of operating handle. Three standard sizes of rams are available, having lifting capacities from 2210 to 8885 lb (based on 5000 PSI). Hydraulic rams can, however, be furnished with any stroke, type of bottom, and "top of plunger" to meet all requirements.

Use Free Postcard for More Details.

(TURN TO PAGE 244, PLEASE)

P86. Front Wheel Brake Control Unit

The front brake control unit developed by Minnesota Automotive, Inc., Minneapolis, Minn., is a compact elec-



trically controlled, self-contained safety device designed to fit *any* vehicle having hydraulic brakes. Its express function is to render better brake control on slippery roads by limiting application of the front wheel brakes.

Installation of the Mico Front Brake Control is simple; it can be mounted at any convenient place between the master cylinder and the front wheel brakes. The unit is similar in appearance to the Brake Lock mentioned in November issue, page 214.

Instant readiness at all times is insured by the use of the electric dash switch. A flip of the switch to "on" position and a step on the brake pedal is all the driver needs to do to change from 4-wheel to rear wheel brakes. When the switch is "on", better than 95 per cent of the braking power is applied only to the rear wheels. Steering control of the front wheels is retained, reducing the possibilities of jackknifing or wheel locking. When bad road conditions clear up, he merely flips the switch back to "off" position and he again has full 4-wheel brakes.

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K-D® Tools make hard jobs easy

HERE ARE A FEW ON THE JOB

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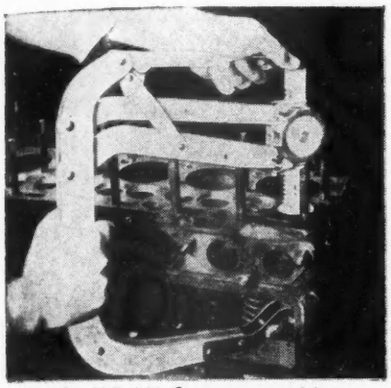
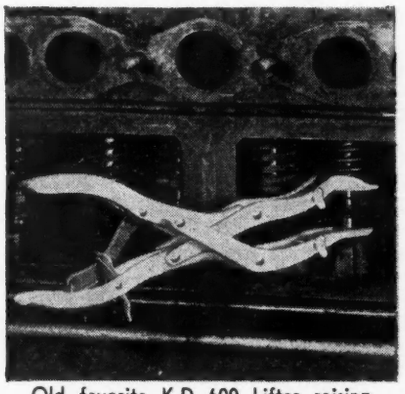
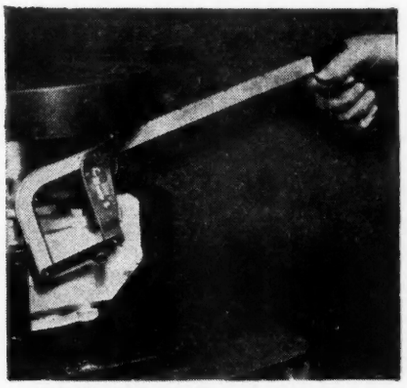


Popular K-D 380 Compressor raising a valve. Fast. one-man operation.

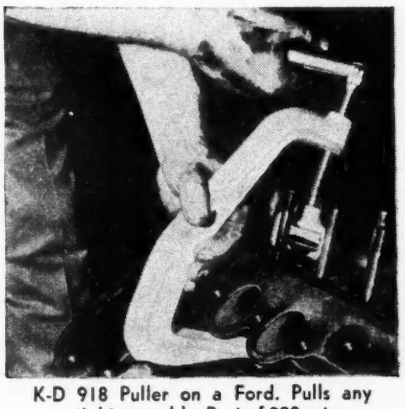


Old favorite K-D 600 Lifter raising valve. For nearly all L-heads.

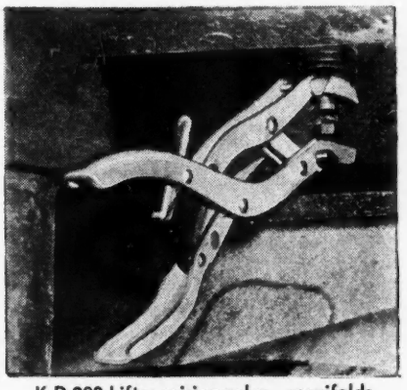


K-D 99 Hacksaw "cuts around corners" with quick change to short blades.

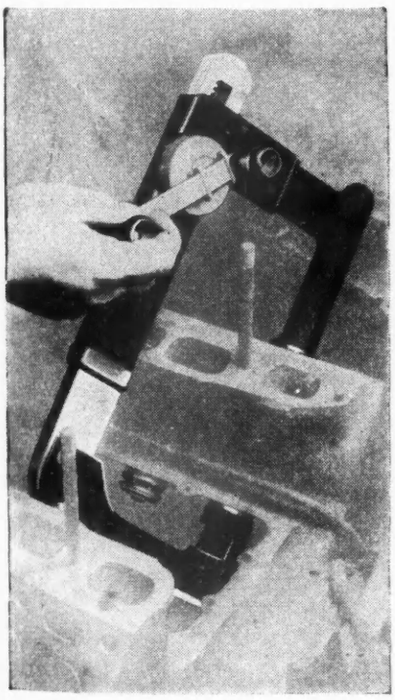
Removing Ford retainers with K-D 917 Driver. 917 and 918 Puller make 920 set.



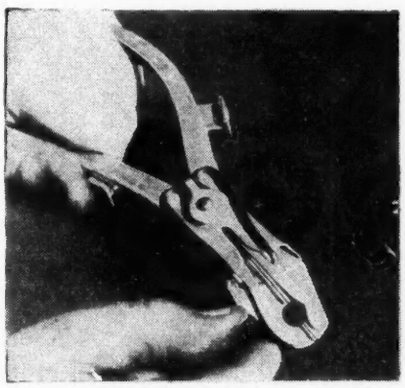
K-D 918 Puller on a Ford. Pulls any tight assembly. Part of 920 set.



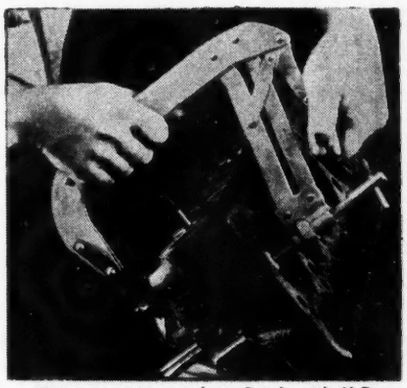
K-D 900 Lifter raising valve—manifolds in place. Note clear view.



K-D 335 for Cadillac. One-man operation. 335 and 336 make 337 set.



Easy loading K-D 605 or 336 Keeper Inserter. 336 part of 337 Cadillac set.



Raising spring on late Buick with K-D 385 Compressor. Also for small L-heads.

good, reliable

K-D TOOLS

"Accelerate in '48"

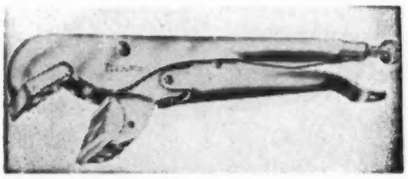
K-D MFG. CO., LANCASTER, PA.

New Products

(CONTINUED FROM PAGE 242)

P91. New Pli-Rench

The self-aligning jaw on the Pli-rench makes possible a full jaw-length grip on both straight or angular objects and provides a powerful hold on work which is hard to handle. A simple locking arrangement provides a better than one-ton grip, even with hand removed, yet the wrench can be released instantly at the touch of a finger. Usable as a pliers, wrench, clamp or vise.



The Whale Pli-rench is manufactured by the Whale Tool Corp., New York, N. Y.

Use Free Postcard for More Details.

P92. Ring Compressor

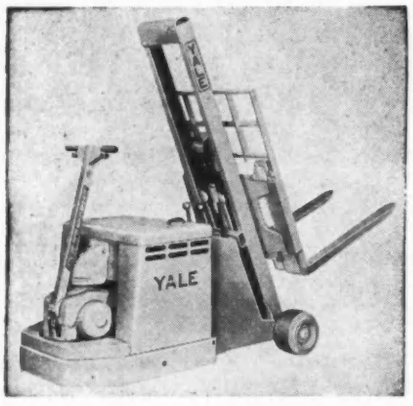
A 4-piston ring compressor has been announced by Calvan Machine Products, Inc., Jackson, Mich. It is a revised model of the No. 569 Two Band Ratchet Type Piston Ring Compressor. Instead of the conventional 2½ in. wide band, Calvan now has increased the width to 3 in., so that it is large enough to compress 4-ring pistons.

Use Free Postcard for More Details.

P93. Tilting-Fork Unit

Latest addition to the Yale & Towne "Worksaver" line of *hand-guided*, electric industrial trucks is the tilting-fork model. It is capable of every function performed by the conventional full-size electric fork truck, and has the added advantage of being small enough to work in corners.

The truck weighs only 3200 lb with battery; can lift 3000 lb if the load is not over 28 in. long and 2000 lb if it is 48 in. long; can hoist to a height of 58½ in.: will tilt to a full 21 deg; has two speeds



forward and two speeds in reverse; has an inside turning radius of 31 in. and an outside turning radius of 81 in.; uses a 12-volt battery.

Use Free Postcard for More Details.

P94. Air-Powered Drills

A straight type and pistol grip type of air-powered hand drills are being distributed by Air-Speed Tool Co., Los Angeles, Cal.

Controllable speed regulation, simplicity of design, rugged construction, high speed, light weight and cool operating characteristics are features claimed for the new drills. The tools are designed to operate efficiently at air pressures of 90 to 100 lb. Air consumption is estimated at 12 cu. ft. per minute at drill speeds of 14,000 r.p.m.

Use Free Postcard for More Details.

P95. Fuel Additive

The Celco Corp. of New York announces the availability of Celco Tank Kleen Formula No. 101, a new type of liquid fuel system cleaner designed to dissolve and eliminate formations of gums, tars and other dangerous binders that are directly responsible for a large percentage of power stoppage and maintenance expense.

Applied either as a reconditioner or as a preventative, simply by pouring into the fuel tank, it functions equally as well with oil, gasoline, kerosene or fuel oil systems, the manufacturer states.

Use Free Postcard For More Details.

P96. New AC Welder

The Hobart Brothers Co., Troy, Ohio, is announcing a new AC welder especially designed for use with modern "Heliarc" equipment as supplied by The Linde Air Products Co., using helium or argon for Inert-Gas-Shielded Welding.

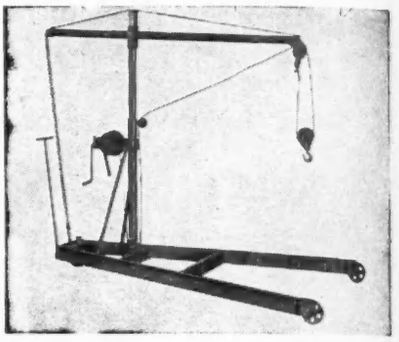
In addition to Hobart's standard AC welder features, this Model TIH-300-s embodies high frequency stabilization to insure easy starting and dependable maintenance of the gas-shielded arc with practically no rectification of the AC current passing through it. This is said to insure sound welds of clean appearance, and reduces the amount of current drawn from the power lines by the transformer. A window is provided through which the spark gap may be observed, with a door through which it may be reached for adjustment.

Use Free Postcard for More Details.

P97. Portable Cranes

A number of improvements throughout its line of Blue Heron truck cranes are announced by Cam Tool Co., Inc., Oakland, Cal.

Chief of these improvements are bronze bushing on the pinion gear shaft, an improved winch assembly, and improvement of the locking pawl with a new positive spring actuation. In addition, handles have been made detachable and a 6-in. friction brake has been added to all but the smallest model.



Blue Heron Truck Cranes are available in capacities of 500, 1000 and 2000 lb. These cranes mount in a well or socket welded to the truck frame and swivel throughout a complete circle, enabling one man to load heavy and bulky items.

Use Free Postcard for More Details.

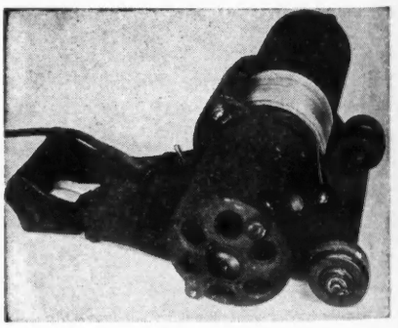
P98. New Wrench Grips

New "Nugget" socket wrenches, made by Blackhawk Mfg. Co., Milwaukee, have torpedo-shaped grips which are devoid of all knurling except for two decorative red bands. The balance of the grip and handle is smooth, polished chromium plate.

Use Free Postcard For More Details.

P99. Wheel Spinner

Stewart-Warner Corp. of Indianapolis now has available a new heavy-duty truck wheel spinner (No. G-309610) which makes it possible for owners of the Stewart-Warner Wheel Balancer to handle truck wheels without removing them from the



truck, eliminating the need for a truck wheel hoist. The new heavy duty truck wheel spinner is powered by two 1¼-hp motors operating on 220-volt AC.

Use Free Postcard For More Details.

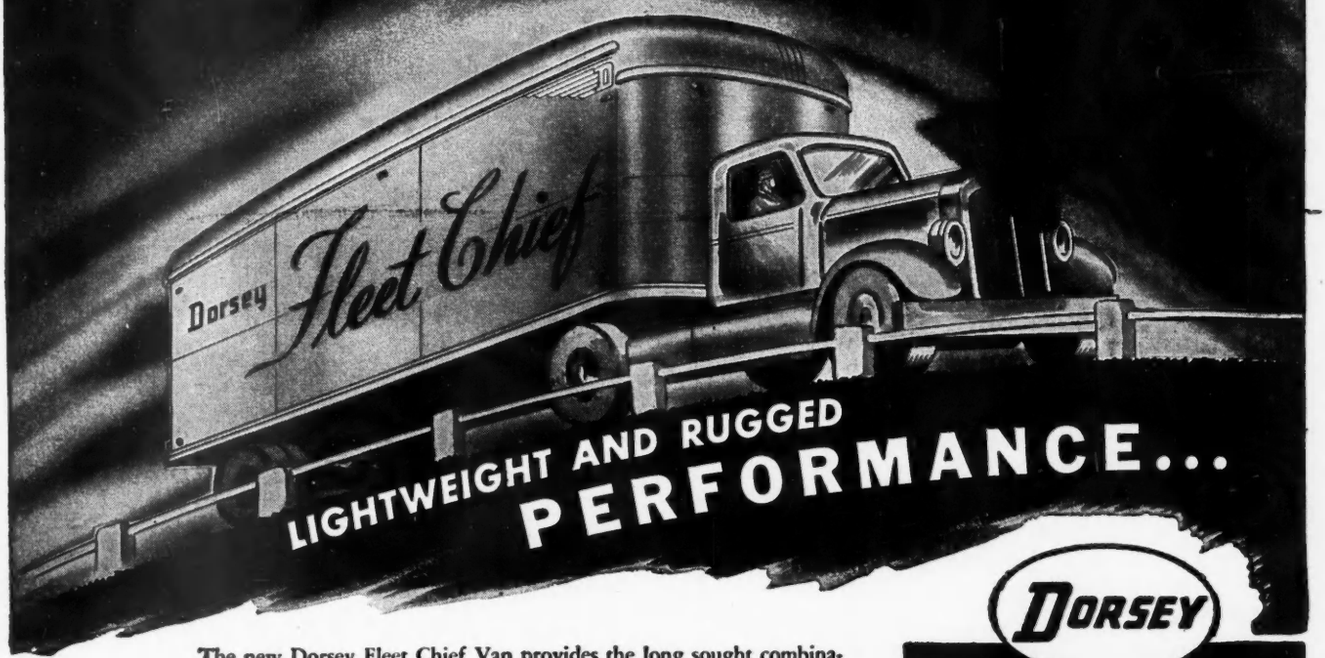
END

(Please resume your reading on P. 62)

DORSEY TRAILERS

NEW

Fleet Chief



LIGHTWEIGHT AND RUGGED

PERFORMANCE...

The new Dorsey Fleet Chief Van provides the long sought combination of DUTY, LIGHTNESS and WEIGHT CAPACITY meeting State Law limits.

. . . The Dorsey Fleet Chief featuring newly designed rub rails for greater body rigidity, lightweight steel crossmembers and the Dorsey Designed X.U.Z side construction is outstanding in Performance and Appearance.

Maximum, profitable payloads.

See your Dealer or write for literature. *Desirable Distributorships open.*

DORSEY

DORSEY TRAILERS

ELBA, ALABAMA, U. S. A.

MODERN DESIGNED TRANSPORTATION

DODGE Makes Many Changes

(Continued from page 63)

springs to provide comfort. It also has a long life because the cushion of air reduces wear on the springs. A hand control permits the driver to adjust the cushion buoyancy to his weight or road conditions.

An all-weather heating and ventilating system for comfort in any season or weather is available. It is an ingenious combination of truck heater, defroster vents, vent windows, cowl ventilator and a fresh air intake from behind the front radiator grille.

The de luxe and custom cabs, supplied as optional equipment, have what is termed "360-deg." vision through increased glass area and the installation of rear quarter windows.

Windshields and windows of the new "Pilot-House" Dodge cabs are higher and wider, adding to vision and safety. Drivers are able to see in all directions.

Noteworthy from the standpoint of the operator is the fact that all conventional models can be road-serviced from the left side—the fuel tank, oil filler, radiator filler and battery being located on the left.

Mechanical Highlights

IN view of the great variety of conventional and COE models offered in the line, it is impossible to describe all of the mechanical specifications. Full details will be published, however, in the January CCJ Truck Specification Tables and highlights are given below. It is of special interest to note that Dodge has seven different engines to handle its varied power requirements.

The new line has larger and improved braking systems; front and rear axles of increased load-carrying capacity; longer front springs, and increased treads.

Engines for models of 1½ tons and upward are rubber mounted at the front to reduce noise and vibration. A thermostatic manifold heat control valve has been added on models from ½ ton to 2 tons, inclusive, to control the temperature of intake manifold gases. The ignition coil is mounted on the engine to reduce radio interference.

Engines for the 2½- and 3-ton high tonnage models are fitted with sodium-cooled stellite-faced exhaust valves and stellite-faced exhaust valve seats, with intake valve seat inserts of hard heat-withstanding alloy. Two-ton engines also feature sodium-cooled stellite-faced exhaust valves.

Chassis Details

BATTERIES for all conventional cab models are mounted outside the left side rail in the air stream for better cooling and longer life. They are easily accessible for service through an opening in the cab floor. Capacity of batteries for models rated ½ ton through 2 tons has been increased. The battery in COE. models is mounted directly under the hood where it is readily accessible.

Radiator cores are lower and wider to facilitate better cooling. Frontal area of the ½- to 2-ton models is increased. The fan shroud and pressure type radiator cap are continued on the 2½- and 3-ton models.

Although transmissions remain substantially the same as before, the shift lever tower and hand brake lever on all models are moved forward to the front edge of the floor board to afford maximum clearance between the controls and the seat. A new synchronizer has been added to the one-ton transmission to facilitate shifting.

The clutch set-up remains unchanged, with oversize units as optional equipment offered on the ½ through 1½-ton models.

Front axle capacities are upped on 1½-ton through 3-ton models, by use of redesigned I-beams with larger sections. Treads are increased to effect a smaller turning radius. Tie rods and drag links are improved to provide better sealing around the ball studs, with a rubber seal replacing the leather seal used formerly. A solid rod drag link is used on models of ½ through 1-ton capacity.

Load-carrying capacity of rear axles on ½- through 2-ton models has been increased. The rear axle for the ½- and ¾-ton models has a one-piece tubular housing with the wheel bearing seal against the shaft instead of the hub (which was former practice). The diameter of the housing for 2-ton models has been increased from 4 in. to 4¼ in. at the spring seat to increase strength. In the interest of reducing unsprung weight, the 2-ton B-1-KA and B-1-KMA two-speed axle now has a one-piece tubular housing.

The vacuum booster is optional on the 1½-ton B-1-F, B-1-FA, B-1-FM, B-1-FMA models. LIt is standard on the 1½-ton B-1-H, B-1-HA, B-1-HM and B-1-HMA, all 2-ton, 2½-ton and 3-ton models. In addition, air brakes are available as optional equipment on the 2½- and 3-ton models.

The two-piece propeller shaft drive with an intermediate rubber insulated center bearing mounting has been adopted for all 1½-, 2-, 2½- and 3-ton chassis; the propeller shaft set-up on other models remaining the same save for length.

Some exceptional improvements have been made in frame construction. On the 2-ton 128-in. wheelbase conventional and 107-in. COE. models, which are used for tractor service, the full depth of side rails is carried over the rear axle to within a short distance from the end of the rail where it tapers from the top of the rail. This taper provides clearance when coupling the tractor to the trailer. This improvement previously was incorporated on models of the 2½-ton and 3-ton line. Frame side rail sections on 2½- and 3-ton models are increased. Frame side rail reinforcements are supplied as standard equipment on some models and as extra equipment on all others from the 1½ through the 3 ton.

Front springs for ½-ton through 2-ton models are longer to provide a softer ride, and capacities are increased to handle the heavier loading. All front springs are shackled at the rear with the spring taking shock loads in tension rather than compression.

Full wide base rims are used on all 20-in. wheels to provide better tire life.

The four-wheel-drive Power-Wagon remains substantially the same as before, both in styling and mechanical specifications.

END

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